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# Railway Age

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May 17, 1930

No. 20

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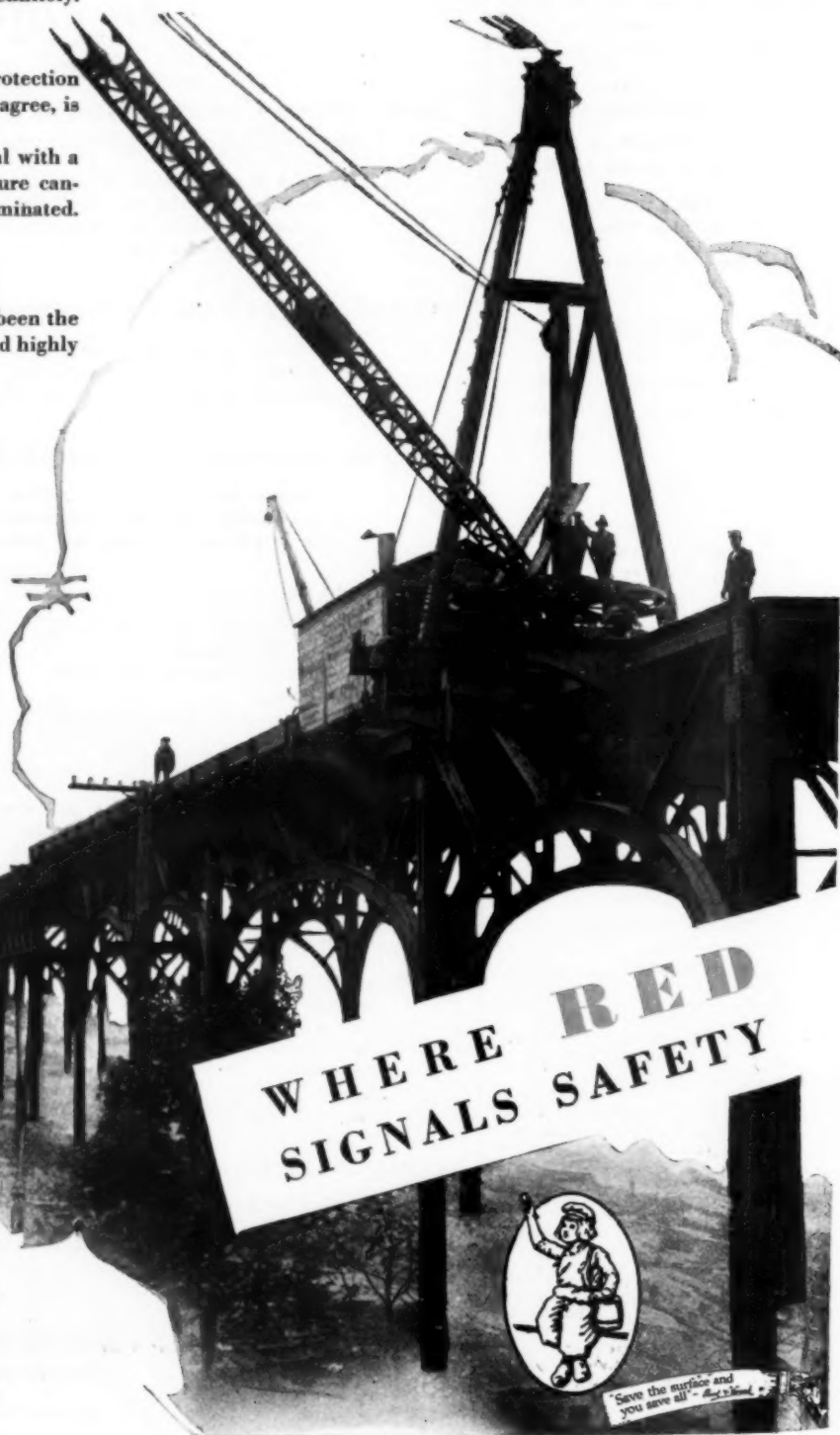
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# Railway Age

Vol. 88, No. 20

May 17, 1930

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## Decline in Railroad Employment

**I**N the first two months of 1930 the average number of persons employed by the railways was only 1,553,003. This is the smallest number reported for the first two months of any year since 1922, and shows a decline of about 430,000 since the first two months of 1920, which were the last two months of government operation, and a decline of 228,533 since 1923, in which year the number of employees was the largest since 1920. The average number of employees in the entire year 1929 was the smallest since 1922, excepting in 1928.

The general tendency of the total number of employees to decline which has prevailed throughout the last decade is in striking contrast to the general tendency of the number to increase which prevailed prior to the last decade. What are the causes of this marked change? The large investment made within recent years in labor saving equipment and machinery, and the improvements effected in operation, have reduced the number of employees required to produce a given amount of transportation service, but similar progress was constantly made prior to the last decade. Plainly, therefore, either average transportation output per employee has increased much more rapidly during the last decade than before, or there has been some other important cause of the decline in railroad employment within recent years.

The eight-hour working day was substituted for the ten-hour day while the railways were under government operation, and in order to locate the cause or causes of the change in the tendency of railroad employment it is necessary to compare developments during a period when the ten-hour day was still in effect with developments that have occurred since the eight-hour day has been in effect. Developments during the period 1911 to 1917, when the ten-hour day was in effect, are fairly comparable with those during the period 1923 to 1929, when the eight-hour day was in effect.

### *Reduced Growth of Traffic*

In 1911 the railways produced 275,302 million net ton-miles of freight service and 32,371 million pas-

senger-miles of passenger service. By utilizing the familiar statistical method of multiplying passenger-miles by three to place them on a comparable basis with ton-miles, and adding the result to ton-miles, a total of 372,417 million traffic units, a convenient measure of total railroad performance is secured for that year. The average number of employees in service in 1911 was 1,599,854. By division it appears that the performance per employee averaged 232,782 traffic units. In 1917 net ton-miles rose to 430,319 million and passenger-miles to 39,477 million, equivalent to 548,750 million traffic units. Average employment amounted to 1,732,876, giving an average performance in traffic units per employee of 316,670. Thus, in the period from 1911 to 1917 the following increases were shown: Number of employees, 8.3 per cent; passenger-miles, 21.9 per cent; net ton-miles 56.3 per cent; traffic units, 47.3 per cent; traffic units per employee, 36.0 per cent.

What has happened in the last six years? The year 1929 was the highest in net ton-miles ever reported, the total being 492,180 million. Passenger-miles, however, showed a reversal of the trend existing in the first period and totaled only 31,078 million. Performance of 1929 in traffic units therefore actually totaled 585,414 million as compared with 570,108 million in 1923. Average employment was 1,857,674 in 1923, and 1,662,463 in 1929, so traffic units per employee increased from 306,893 in 1923 to 352,137 in 1929. As against the increases from 1911 to 1917 previously shown, 1929 showed the following changes as compared with 1923: Number of employees decreased 10.5 per cent; passenger-miles decreased 18.1 per cent; net ton-miles increased 7.9 per cent; traffic units increased 2.7 per cent; traffic units per employee increased 14.7 per cent.

The total transportation service rendered by the railways, as measured in traffic units, increased 47.3 per cent in the period 1911-1917, whereas from 1923 to 1929 it increased only 2.7 per cent. Let us suppose that, instead of this relatively insignificant increase in total traffic, a growth similar to that during the first period had occurred. Total traffic units last year would then



have been 839,769 million; and if average output per employee had been what it actually was in 1929, viz., 352,137 traffic units, the total number of employees in 1929 would have been 2,384,778 as against an actual 1,662,463.

Objection may be made to the figures given above upon the ground that the traffic unit is not an ideal common denominator of railroad performance. Making due allowance for this and other objections, however, the figures still have sufficient force to make clear that the primary cause of the decrease in railroad employment within recent years has been that railroad traffic has not increased relatively as fast as it did in the period before the war.

### *"Technological Unemployment"*

The railways at various times have been criticized for contributing to so-called "technological unemployment," but their contribution to it is not unique. It is common to both agriculture and industry in general, because of the greater and greater need to reduce unit production costs through increasing, by the ever-growing use of more modern and efficient machinery, the output of product per man employed. In this connection it is interesting to note that, because of the shift from the ten-hour day to the eight-hour day, the traffic units handled per railway employee were less in 1923 than in 1917. Further, the relative amount of "technological unemployment" caused seems to have been smaller in the second period than in the first, as the increase in traffic units per employee was 36 per cent from 1911 to 1917 and only 14.7 per cent—or relatively less than half as great—from 1923 to 1929. In the first period increased traffic more than offset technological unemployment. The real trouble in the second period was that the increase in traffic was not sufficient to offset technological unemployment.

What has been the cause of this change in trend? It has been largely due to competition from other forms of transportation. Some of this competition has been economic and justifiable, and no effective steps can be taken against it. On the other hand, much of it has undeniably been unjustified and uneconomic and has arisen because other forms of transportation have not been held to the same standards of regulation and payment of their actual costs as have the railways.

Public opinion and governments swayed by it are not omniscient. As a matter of fact, these governments are characteristically lazy intellectually and are apt to give heed only to the most insistent calls upon their attention. Obviously the first step in securing this attention should be the development of a militant and informed opinion among railroad employees themselves. If employees, who have the most at stake in the future development of railway business, and the most to lose from further development of subsidized competition with the railways, cannot be aroused to learn and disseminate the

facts and insist upon justice for themselves, then there is small chance that general public opinion will take up the battle for them.

### *Subsidized Competition*

Attacks upon the railways' efforts to increase productivity, proposed legal artificial barriers to restrict output and thus to create jobs, are foredoomed to failure, because they are attempts to stem the current of economic progress. A curious anomaly now exists when legislation to defer railroad consolidation is being discussed, because of the apprehension expressed regarding the effects of such consolidations upon employment, while at the same time huge waterway expenditures are being advocated, which, if made, can only tend to reduce railway traffic and the number of railway employees. The fact is ignored that increased business, for the railways as well as for industry in general, is the shortest road to both reduced costs and increased employment.

The railways have proved their ability to increase the efficiency of their service, to lower costs, and to bear the brunt of the transportation burden of the country, all without artificial assistance or subsidy from the taxpayers. They can continue to do so, unless they are faced with further widespread competition which does receive artificial assistance by having a substantial part of its costs met by the taxpayers. It is no merit in a transportation enterprise that, with the aid of a subsidy, it can successfully compete with the railroads. Any form of transportation, even down to the lowly wheelbarrow or pack mule, can compete with them if the taxpayers subsidize them sufficiently. It is time that these facts were called to public attention; and railway employees and labor leaders, because of their direct personal interest, should be the first to bring them to public attention.

## Extending Cab Signaling

THE intensive development of automatic train control, caused by the two orders of the Interstate Commerce Commission in 1922-1924, brought as a by-product continuous cab signaling, which is considered by many authorities as being of even more practical benefit in the normal protection and operation of trains than the primary function fulfilled by the train control system, i.e., the application of the brakes automatically.

The cab signal affords a continuous indication of the occupancy of the track ahead and provides protection at all times against such hazards as a switch being opened or a car drifting out to foul the main track even after the train has entered the automatic block in question. Another great advantage is the increased safety



of train operation afforded during fogs or storms when the engineman cannot readily observe, and sometimes entirely misses, the wayside signals. A reduction in speed at such times to permit the engineman to "find" the wayside signals often causes serious delays, whereas with cab signals, trains can make the regular schedules with full knowledge of the signal indications. These advantages of cab signaling have been appreciated by the 18 roads which have incorporated such equipment with their automatic train control, and several roads, notably the Chicago & North Western and the Pennsylvania, have voluntarily made extensive installations beyond those required by the Commission.

An article elsewhere in this issue describes such an installation on the Central Railroad of New Jersey. As time goes on, it is quite likely that continuous cab signaling, which was at one time considered only as an adjunct, will be the primary consideration in many installations made to provide increased safety of train operation, over and above automatic block signals.

## What About the Holding Companies?

**I**N the investigation of the activities of so-called "holding companies" in acquiring railroad securities, emphasis so far has been largely on potential evils which might arise from such ownership. While abuses might result from improper activities by holding companies just as in any other form of corporate control, nevertheless it should not be overlooked that such companies might very well perform a decided service for the railroads.

A few years ago there was considerable public agitation over "absentee ownership" of corporations, i.e., control by scattered stockholders who do not exercise their managerial prerogative and thus leave the management of a company, or possibly a small financial coterie, in virtually irresponsible control of its affairs. To the extent that corporations are owned by scattered and uninterested stockholders "absentee ownership" must be regarded as an evil. Ownership of property confers rights, but it also entails responsibilities. Ownership which is not prepared to guard its rights and will not assume its responsibilities is a threat to continued ordered progress on the part of the corporate form of ownership.

It is in substituting interested ownership for absentee ownership of railroads that much of the benefit of a larger distribution of railroad stocks among employees and patrons lies. In the same way a holding company—and by this we mean a legitimate investment enterprise and not a device for stock manipulation—will probably exercise its ownership prerogative more actively

and more intelligently than scattered stockholders owning in the aggregate an equal amount of stock. In all probability such an organization will have a competent analyst in charge who will watch the properties in which it is interested and lift a more intelligent voice in influencing their affairs than would a multitude of smaller stockholders who have never seen the property whose ownership they share. We hope that the investigation into the holding companies will not stress the vague fears of some possible manipulation of stocks to the exclusion of testimony regarding the possible benefits to both railroads and public which some such companies, properly managed, may be prepared to offer.

## Longer Rails

**W**HAT is the economical length of rail? Over a period of years the standard has increased from 28 to 30 ft., then to 33 ft. and more recently to 39 ft. And the end does not yet appear to be in sight. At the time that the Rail Committee of the American Railway Engineering Association decided to increase the standard to 39 ft. there was a strong sentiment for 45 ft. More recently, as described on a following page, the Lehigh Valley has secured and laid five track miles of 66-ft. rail.

The determination of the standard length for rail involves a number of considerations. In the first place, there is the problem of transportation from the mill to the point of use. The 28-ft. standard was a reflection of the then-common 30-ft. car, the 33-ft. rail of the 34-ft. car and the 39-ft. rail shows the influence of the 40-ft. car. This relationship has to date been the governing one. It is questionable, however, whether it should longer be allowed to overshadow more important considerations.

Another consideration which has been given considerable weight in the past has been that of coping with the expansion in the longer rails. It has been contended that if long rails were laid tight, there would be danger from buckling in hot weather, while if they were laid with the normal expansion allowance the joints would open up unduly and accentuate battering during cold weather. Recent experience has, however, tended to minimize these fears. With more and better ballast, the liberal use of rail anchors, better joints and bolts, the track of today is far stronger than that of a decade or two ago and the tendency is to reduce the allowances for expansion previously considered necessary. It is significant of this trend that the Lehigh Valley laid its 66 ft. rails tight at temperatures ranging from 35 to 40 deg. F.

Still another consideration in the past has been the ability of the track forces to handle the rails. With hand methods, the increasing weight of sections im-

posed a severe handicap, if not an actual limitation. However, the almost universal use of power machines to handle rail today has eliminated this consideration and it is no longer a factor.

Possibly the most serious handicap to the use of longer rails today is the increased difficulty and cost of producing them. The mills are at present designed to roll rails 33 ft. long. To produce longer rails at most of the mills requires special measures which slow down operations and reduce output, for which they now impose a penalty in price. This is not an insuperable obstacle, however, for it is possible to so rearrange the mills as to enable them to produce rails of 45 or even of 66-ft. lengths as readily as the present standards if and when the demand becomes such as to justify these alterations.

The tendency today is in the direction of a stronger track; longer rails are a step to this end. The suggestion is of sufficient importance to warrant continued careful study by maintenance of way officers. The Lehigh Valley installation and others which are now available for observation should be watched carefully to determine whether they point the way to another advance in the standard length of rails.

## The Triumph of the Safety Specialists

THE Safety Section of the American Railway Association, renewing, month by month, its seven-year campaign to keep us all keyed up to our best efforts toward avoiding death and injury, has now arrived within sight of its goal, and its program for June simply "points with pride." The circular (No. 263, noticed on another page) is devoted to a review of the six yearly records thus far made, supplemented by an exhortation to "keep going forward" that the Nation may always be proud of the railroads' record. This appeal is presented to the public in the shape of an illustrated poster.

Based on the records of 1923, the aim was to reduce the total killed and injured by 35 per cent by the end of 1930; but this has been exceeded already, as shown in the records of the six years 1924-1929. This is taking the country as a whole; some roads have done better, some not so well. And there is still ample field for further efforts, as some of the items continue to call for intensified attention; for example, the number of employees killed in 1929 was 8.45 per cent greater than in 1928.

And a letter from St. Paul, printed in this issue, calls attention to a question of accuracy in the yearly statistics which has not yet been settled to the satisfaction of everybody.

The people do indeed take pride in our record, but there still is need of educating them to more intelligent pride and interest. The citizen who uses these tables of statistics for the purpose of gaining a clear picture of the facts takes three steps. First, the figures shown in the committee's bulletin; *sixty per cent decrease* in deaths and injuries of employees in six years. This is a result of the work of safety committees in thousands of meetings, millions of personal interviews and multifarious efforts too varied to be counted. Some of the diminution in totals is due to reduction of forces (raising the average quality of the men retained) and to other causes, but no one disputes the records showing remarkably effective work by these enthusiastic specialists, on all the principal roads. Considering fatal as distinguished from non-fatal injuries the improvement is not sixty per cent; it is only thirty; this is the more difficult field in which effort must be kept up. "Struck or run over by train" and "falls from engine or car" are principal causes in this class and the task of the instructor is the difficult one of educating individual employees to take precautions against dangers which they unconsciously class as among those which they themselves never will encounter.

But the non-railroader who weighs the values of the accident tables looks not at railroad employees alone. With a natural self-interest he looks at the totals of all the classes: (1) Employees, (2) passengers, (3) other persons not trespassers and (4) trespassers. This grand total includes, of course, some items in which the safety committees have neither credit nor discredit. Here also the present bulletin shows gratifying reductions in the six years; 12 per cent in total killed and 53 per cent in total killed and injured taken together. This record is made in spite of the fact that in persons killed and injured at highway crossings (included under the head of non-trespassers) there has been an increase.

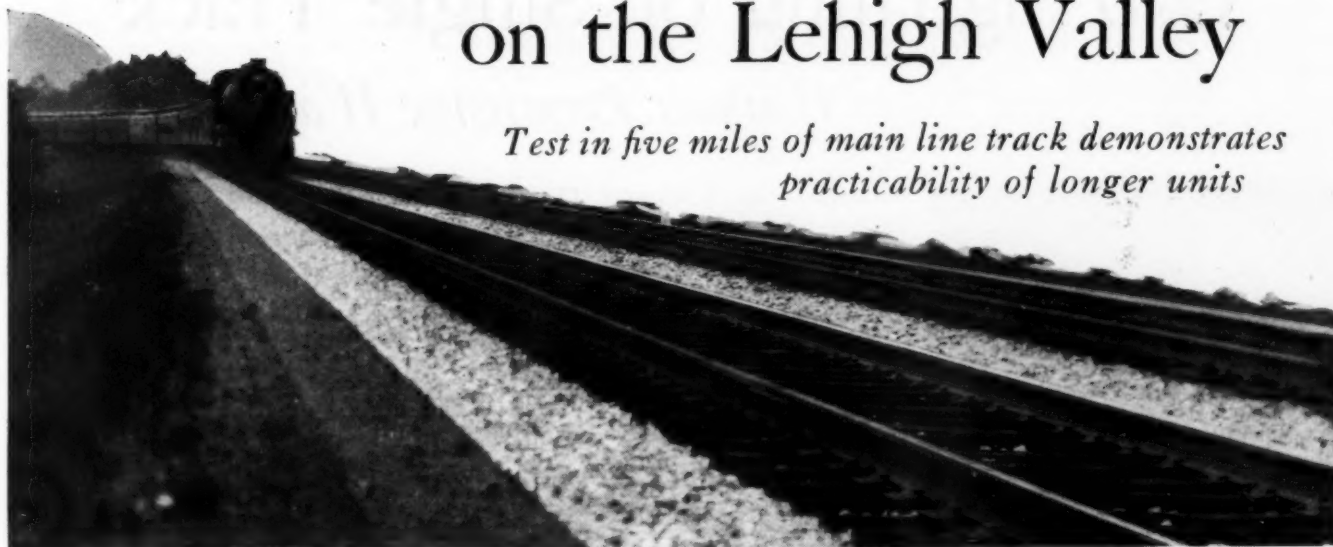
The reduction in deaths (18 per cent) and injuries (22 per cent) in the fourth class—trespassers—is to be attributed largely to the work of railroad representatives in educating school children and others.

But there is a third phase which the American citizen considers in forming an opinion of the safety record of American railroads: the totals of casualties to passengers riding in passenger trains, due to collisions and derailments. It is in reviewing this class that the statisticians now and then remind us that traveling by rail is safer than staying at home. In 1927 the number of passengers killed in train accidents was 10, as compared with an annual average of 75.2 for the five years preceding, and in 1928 it was 16—far below any yearly record prior to 1927. For 1929 the figures again mounted; but still the improvements in strength of passenger cars, in signaling, in discipline and other details keep the safety percentage far above former years; revealing a record of united effort and lavish expenditure of money that volumes could only partially explain.



# 66-Ft. Rails Prove Successful on the Lehigh Valley

*Test in five miles of main line track demonstrates  
practicability of longer units*



*The "Black Diamond" Speeding Over the 66-ft. Rails*

ON two occasions during the spring of last year, the Lehigh Valley relaid a total of 1,000 tons or about five consecutive track miles of 33-ft. rails in its eastbound main track, near Towanda, Pa., with 66-ft. rails of 136-lb. LV section. Before taking this step the action of the shorter rails in track had been carefully studied and it was found that, in many cases, long stretches of 33-ft. rails were tight together or were so firmly fastened with joint bars that expansion was impossible, resulting in practically a continuous rail. If this condition could exist without difficulty there seemed to be no reason why longer rails could not be used.

## **Study Made of German Practice**

It was known that it has been common practice on the German State Railways for some time to use rails of 30 meters, or 98.42 ft. in length, and that in many cases these long rails are welded together. A conference with Dr. Buckholtz of the German State Railways indicated that no trouble was being experienced insofar as expansion was concerned, even though very limited openings were allowed at the joints. Rail of 66-ft. length was chosen because of the facility with which a faulty rail of this length could be relieved by the use of two 33-ft. rails if the necessity arose. The 66-ft. rails were rolled at the Lackawanna plant of the Bethlehem Steel Company at Buffalo, N. Y., and were as straight as any 33- or 39-ft. rails which had been purchased previously by the Lehigh Valley. The rails were shipped to Towanda in 40-ft. low side gondola cars with drop ends, two cars being used to a rail length. From 40 to 45 rails were loaded to each pair of cars, the bottom layers of rails being given six points of support, three in each car.

## **Rails Were Laid in the Usual Manner**

The manner of laying the long rails was similar to that which has been used in laying 33- and 39-ft. rails on this road during past years; that is, by means of locomotive cranes. These cranes, without alteration other than the substitution of a special pair of double

rail tongs for the single rail tongs ordinarily employed, were used in setting the rails in place. The first two miles of rails received were laid under traffic on March 23, while the last three miles were laid on April 15, when exclusive use was secured of the track.

When the 66-ft. rails were being laid, the temperature ranged from about 35 to 40 deg. F., and the rails were laid practically tight. Since then, they went through the extremely hot weather of last summer, with abrupt temperature changes, with entire success, notwithstanding the fact that the entire five miles was raised and surfaced during the summer without any tendency on the part of the track to swing out of line or to become "kinky."

The track construction where the 66-ft. rails were laid is similar in every respect to the present standard main line track construction of the Lehigh Valley; stone ballast, six-hole, 38-in. angle bars, 20 treated ties to the 33-ft. panel, double-shoulder tie plates weighing 22 lb. each, with two cut spikes holding the rail, one outside and one inside, one plate anchor cut spike at each end of the ties, and a sufficient number of rail anchors to keep the rail from creeping.

## **Long Rails Are Proving Satisfactory**

As a result of the ease with which the 66-ft. rails were placed in the track, and of the observations which have been made since their installation, the officers of the Lehigh Valley are satisfied that the longer rails are practical and conducive of large economy. Records on the division on which the long rails were laid show that the longer rail was laid at a cost somewhat less per ton than 33-ft. rail. This was due not alone to the fewer number of rails which had to be handled, but also to the fewer number of joints and bolts necessary.

The study and investigation leading to the installation of the 66-ft. rail were carried out under the direction of G. A. Phillips, chief engineer of maintenance of the Lehigh Valley, while the rail was actually laid under the supervision of R. E. Patterson, division engineer, and Daniel Oakes, supervisor of track.



## New Jersey Central Installs

# Cab Signaling on Single Track

## Without Permissive Wayside Signals

*Coded continuous system with three-block A. P. B. indication in locomotive expedites traffic and postpones second tracking*

By F. W. Bender

Signal Engineer, Central of New Jersey, Elizabeth, N. J.



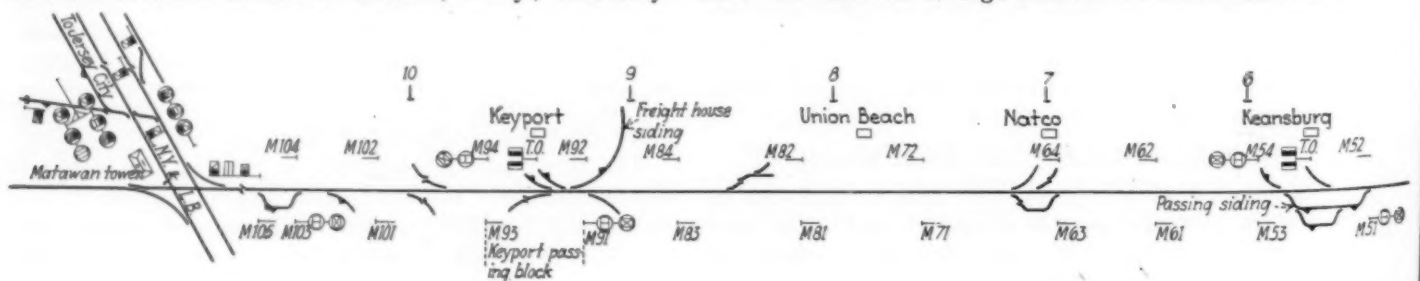
Left—The Cab Signal in the Locomotive Right—A Phantom Wayside Location

**D**ECIDED benefits in the operation of trains, as well as an increase in track capacity that will defer second tracking, have been secured by the installation of cab signaling on an 11-mile section of single track on the Central Railroad of New Jersey, between Matawan, N. J., and Atlantic Highlands, which is a portion of the Sea Shore branch of the Jersey Southern division. The locomotives operated over this Sea Shore branch were already equipped for operation over the coded train control territory installed to comply with the orders of the Interstate Commerce Commission between Elizabeth Avenue, N. J., and Bay

Head Junction. Consequently a minimum expenditure was required to provide complete signaling protection on the Sea Shore branch because it was necessary to install only the roadside apparatus, including headblock signals at passing sidings, but without wayside intermediate permissive signals.

### Operating Requirements

The number of trains operated on this line varies from a normal of 22 trains daily to as many as 40 or more on Saturdays, Sundays, and holidays during the summer. In addition a large number of excursion trains



Track and Signal Plan of Territory

are also handled on this branch during the summer months. Under the old method of operation no automatic signals were provided, the trains being operated by time-table and train orders. Serious consideration had been given to the construction of a second track, although the expense was perhaps not justified by the volume of business available. The installation of the new cab signaling system has not only brought about safer operation, but has also resulted in an increase in the track capacity such that second tracking has been postponed indefinitely.

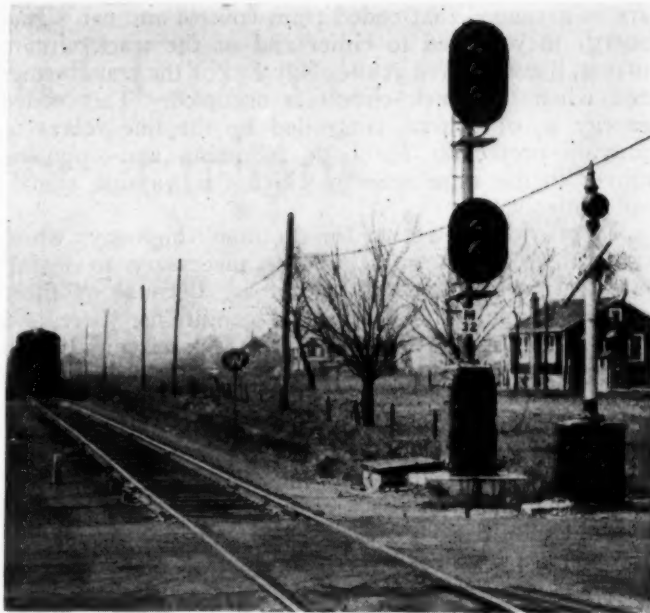
In determining upon the type of installation it was thought desirable to provide a signal system that would meet the present and future traffic requirement with respect to headway. It was also necessary for the distant or cautionary indication to be provided at least maximum braking distance in the rear of stop signals. Consequently, the use of a short block length was required to keep trains moving to the best advantage. Therefore, it seemed advantageous to provide three-block indications in the cab of the locomotive and the coded continuous train control and cab signal system made it possible to obtain these indications with ease.

Another reason for deciding upon the use of cab signals lay in the fact that this territory is frequently covered with dense fogs, and the cab signal informs the engineman of the condition of the track for three-block sections ahead under all weather conditions. The indications employed are: Green—proceed; yellow over green—approach next signal or block marker at restricted speed; yellow—proceed at restricted speed prepared to stop at next signal or block marker; red—proceed at slow speed prepared to stop short of any obstruction.

#### Rules Governing Operation

Locomotives with no automatic train control apparatus cannot be dispatched over the cab signal territory unless an equipped locomotive is coupled ahead. Absolute "stop and stay" leaving signals, automatic in operation, are located at ends of passing sidings. When a train is stopped by such a signal it must stay until the signal is cleared or until authorized to proceed by the dispatcher. When the train crew cannot get in touch with the dispatcher the train may proceed by sending a flagman ahead until a less restrictive indication is displayed by the cab signal. Only in cases of emergency are other points than designated passing sidings used for meets or passing points. If, for any cause, the train clears the main track at any point other than a designated passing siding, it must on leaving, be preceded by a flagman until a yellow or less restrictive indication is displayed by the cab signal. As is customary in A. P. B. territory, a train between passing sidings must not reverse direction of movement unless it is preceded by a flagman to the next signal displaying a proceed indication.

In this territory cab signal indications do not supersede block signal and interlocking signal indications



Headblock Leaving Signal at Belford

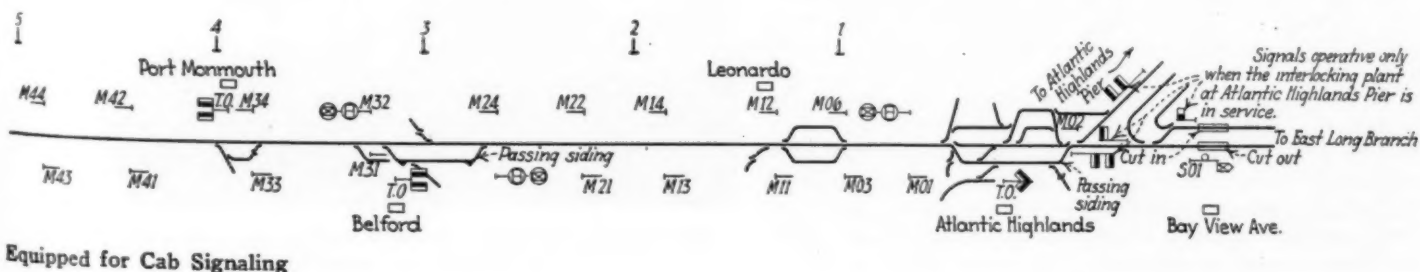
except when the cab signal changes to a more restrictive indication than that displayed by the last wayside signal, or when the cab signal changes to a less restrictive indication from that displayed by the last wayside signal and the train is clear of a possible broken rail or restricted speed route. If the cab signal should change to a more restrictive indication it is necessary for the engineman to acknowledge this change in order to forestall an automatic brake application.

#### The Signal System

In general, the signal system is a single track, three-block A.P.B. continuous cab signal system which differs from former A.P.B. systems in that three-block cab signal indications are provided instead of the customary two-block signal indications. The only wayside signal used on this installation is the absolute stop and stay signal, ordinarily used as a leaving signal at the passing sidings. The cab signal indication conforms exactly with the indications which would be repeated from wayside signals were they used. The coded energy not only functions to operate the cab signals in the locomotive, but also the train control equipment.

The block limits, as indicated in the accompanying diagram, extend between the eastbound home signal for Matawan tower and the westbound home signal for Atlantic Highlands Pier tower. The wayside leaving signals and the phantom locations are marked by number plates. At the phantom locations the number plates, which mark the block signal limits, are attached to a square concrete post 4 in. by 4 in. by 24 in. above ground or to the signal instrument cases.

The track circuits in this territory are 100-cycle a-c., using two-element, neutral track relays. The circuits



Equipped for Cab Signaling

are so arranged that coded train control and cab signal energy may be fed to either end of the track circuit, that is, it may be fed at the relay end or the transformer end when the track circuit is occupied. This coded energy is, of course, controlled by the line relays to provide protection for both following and opposing moves in the same way in which the wayside signals are controlled.

To provide protection for the many highways which cross this line at grade, it was necessary to install many highway crossing apparatus. Because of these crossing signals and other local conditions, there is a wide variation in the length of track circuits which range from 440 ft. to 3,500 ft. A description of the train control installation on the Central of New Jersey, that appeared in the February, 1929, issue of *Railway Signaling*, gives additional information pertaining to the train control features not incorporated in this article. The signal material for this installation was furnished by the Union Switch & Signal Company and installation was made by railroad company forces.

## Safety Section

### Points with Pride

THE Safety Section of the American Railway Association, through the Committee on Education, E. R. Cott, chairman, proposes that the railway safety departments shall, for the month of June, devote attention mainly to a study of the records for the past six years; and to the fine accomplishments of these years; and that every individual officer and employee should strive toward the accomplishment, with flying colors, of the ends which the Section set out to achieve when in June, 1924, it was resolved to reduce casualties to persons on the railroads, by the end of 1930, to the extent of 35 per cent.

The salient paragraph of the circular is that in which the committee assures the members that a reduction of 50 per cent would not have been an unreasonable ex-

The circular notes that the railways enjoying the most favorable casualty rates are those on which a safety department is maintained and is sufficiently manned.

The constant progress which has been made in every item, during the six years of this country-wide effort, is shown in a series of tables giving the totals of killed and injured each year, 1923-1929. (See Table A.) The reductions, it will be seen, are kept up almost without interruption, except in persons killed and injured at highway grade crossings—included in the third table under "A"—where, in almost every case, the railroad is free from blame.

The regular monthly poster reads—

#### THE NATION POINTS WITH PRIDE TO THE RAILWAY SAFETY RECORD

and gives the totals of casualties to railway employees on duty, 1923-1929, as follows (total of killed and injured):

1923	153,900
1924	126,134
1925	120,158
1926	112,828
1927	89,058
1928	70,935
1929	61,438

The decrease from 1923 in the grand total, including both killed and injured was, it will be seen, over 60 per cent. The reduction in employees killed alone was, in the six years, 30.5 per cent.

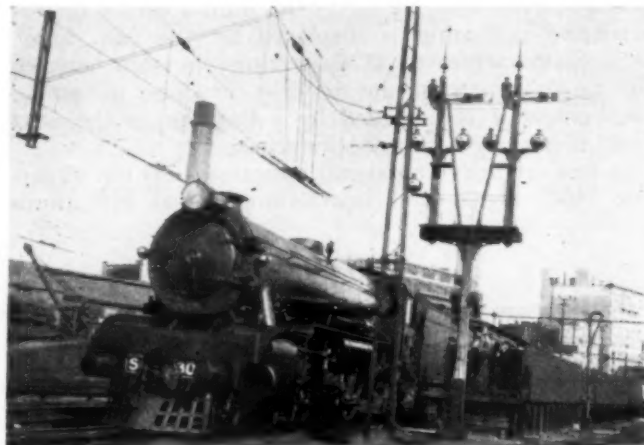
The decrease in killed, all classes, (Table A), was 12 per cent; killed and injured, all classes, 53 per cent. Decrease in trespassers killed 18 per cent; in trespassers injured 22 per cent.

Table A—Casualties to Persons, All Railroads, Seven Years

1—RAILWAY EMPLOYEES ON DUTY			2—PASSENGERS		
Year	Killed	Injured	Year	Killed	Injured
1923	1,940	151,960	1923	143	6,463
1924	1,479	124,655	1924	153	6,023
1925	1,523	118,635	1925	176	5,643
1926	1,587	111,241	1926	155	5,149
1927	1,490	87,568	1927	82	4,560
1928	1,243	69,692	1928	85	4,027
1929	1,348	60,090	1929	100	4,371
3—OTHER PERSONS NOT TRESPASSING			4—TRESPASSERS		
Year	Killed	Injured	Year	Killed	Injured
1923	2,483	9,997	1923	2,819	3,292
1924	2,364	9,932	1924	2,621	3,129
1925	2,423	10,229	1925	2,644	2,928
1926	2,725	11,049	1926	2,623	2,776
1927	2,595	9,675	1927	2,654	2,996
1928	2,802	9,206	1928	2,379	2,636
1929	2,741	9,957	1929	2,307	2,577
5—TOTAL PERSONS, ALL CLASSES					
Year	Killed	Injured			
1923	7,385	171,712			
1924	6,617	143,739			
1925	6,766	137,435			
1926	7,090	130,235			
1927	6,821	104,799			
1928	6,509	85,561			
1929	6,496	76,995			

pectation. Attention is called, however, to the fact that in 1929 the number of employees killed was 8.45 per cent greater than in 1928. Accidents under the head of "struck and run over" and "falls from engines and cars" account mainly for the large numbers of fatal accidents among employees.

THE SOUTHERN PACIFIC reports that no passenger has lost his life in a steam train accident on the Pacific lines of that system during the last ten years. In that time a total of 404,709,492 passengers were carried a cumulative distance of 15,915,677,462 miles, or the equivalent of 639,132 times around the earth. The Southern Pacific has the longest automatic block signal system maintained by any railroad in the world.



The "Sydney Limited" of the Victorian State Railways at Melbourne, Australia



# Attendance at Fuel Convention Exceeds Expectations

*Total registration only 15 per cent less than 1929 record—  
Concluding sessions addressed by H. N. Rodenbaugh  
and R. E. Woodruff*

IN view of general business conditions, it was anticipated that the annual meeting of the International Railway Fuel Association, held at the Hotel Sherman, Chicago, May 6 to 9, inclusive, might experience a serious drop in attendance. Such did not prove to be the case, 956 railroad members of the association registering as compared to 974 in 1929. There were, however, only 240 railroad men guests this year as compared to 616 in 1929. Railway supply representatives numbered 361 or slightly less than a year ago. Seventy more ladies, or a total of 455, registered, bringing the grand total registration this year up to 2,012 as compared to 2,364 in 1929, a reduction of practically 15 per cent.

Following the initial sessions, a report of which was published beginning on page 1131 of the *Railway Age* issue of May 3, the convention listened to a paper, "Should the Railways Expect Decreased Fuel Costs?" by H. N. Rodenbaugh, vice-president of the Florida East Coast. In the absence of Mr. Rodenbaugh, this paper was read by F. S. Robbins, superintendent of motive power and machinery. R. E. Woodruff, vice-president of the Erie, addressed the convention on the general subject of fuel conservation and emphasized the fact that the job is only half done when railroad men learn about fuel-saving methods in conventions and meetings. The real job is to get these methods into effect afterwards. Mr. Woodruff appealed especially for the elimination of departmental prejudices in saving fuel, which never has been a one-man or one-department job.

Additional reports presented at the convention were on Coal and Oil-Firing Practice; Fuel Distribution and Statistics; Classification of Coal; Storage of Coal and Oil; Fuel Stations; Coal and Oil-Fired Power Plants. Abstracts of the address and some of these reports are published below.

## Election of Officers

At the closing session, the railroad members of the International Railway Fuel Association elected the following officers for the ensuing year: President, C. H. Dyson, fuel agent, Baltimore & Ohio, Baltimore, Md.; vice-president, W. G. Black, mechanical assistant to the president, Chesapeake & Ohio, Cleveland, Ohio; vice-president, C. I. Evans, chief fuel supervisor, Missouri-Kansas-Texas, Parsons, Kan.; vice-president, J. M. Nicholson, fuel conservation engineer, Atchison, Topeka & Santa Fe, Topeka, Kan. Executive committee members (newly elected): O. J. Brown, superintendent fuel service, Boston & Maine, Boston, Mass.; L. E. Dix, fuel supervisor, Texas & Pacific, Dallas, Tex.; F. X. Nachtmann, mining engineer, St. Louis-San Francisco, St. Louis, Mo.; Clarence Roberts, assistant road foreman of engines, Pennsylvania, Phila-

delphia, Pa.; (hold-over): J. D. Clark, chief fuel supervisor, Chesapeake & Ohio, Richmond, Va.; J. E. Davenport, assistant to assistant general manager, New York Central, Weehawken, N. J.; T. C. Hudson, general superintendent, Canadian National, Toronto, Ont.; J. R. Jackson, engineer of tests, Missouri Pacific, St. Louis, Mo.; M. Macfarlane, general fuel inspector, New York Central, New York; A. B. Maurice, road foreman of engines, National Railways of Mexico.

## Should the Railways Expect Decreased Fuel Costs?

By H. N. Rodenbaugh

Vice-President, Florida East Coast

While impressive progress has been made in railway fuel economy, largely through the earnest efforts of your Association, can substantial further progress be made with the methods and the devices now in use? This question comes before me because of an experience which I have had with the problem of reducing fuel costs. About four years ago, I instituted a series of tests, with some new and modern locomotives, to determine, if possible, if increased fuel economy could not be obtained through improved firing devices—this road used fuel oil—and improved fire-box details. The tests were very intelligently planned and executed, the greatest care being taken at all times to strive for nothing but the truth. They extended over a period of several months. Every one was keenly interested in them. While certain important improvements seemed possible, the net result was so small that our superintendent of motive power informed me, a few weeks ago, that all the increased economy which had resulted from these elaborate tests could be included between the performance of a good fireman and a careless one.

The locomotive, today, is greatly superior to what it was ten or fifteen years ago. The increase in metallurgical skill and knowledge, better and more economic workmanship, better engineering, and the better appreciation of engineering, all have been factors in the economic improvement of the locomotive as a whole.

This progress should be reflected in a greater actual use of the locomotive, but, unfortunately, that is not the fact. Due to better-equipped and better-organized repair shops, the complicated locomotives of today, with their higher quality of design, materials and workmanship, do not require a greater number of hours after each trip for repair work. Because of their size, they need more time in the ash pits for cleaning their fires, and more at the coaling stations for receiving their fuel than formerly, although mechanical appliances at the terminals have quickened the time of these operations, to a certain extent.

Now let us consider the pressing need for greater economy in railway operations. Today railways are faced with active competition which is reducing their revenues and which may increase—and probably will under the present tendencies of the public's servants—until a grave situation is reached. There is competition from inland waterways, which is a subsidized form of it. There is competition from coastwise steamship service, which is a subsidized form to a certain extent, although its greatest harm results from the absence of regulation of its traffic rates. There is competition from the publicly built highways. And there is competition from the airways, also subsidized through mail contracts and municipally-owned and constructed landing fields. In addition to these causes for reduction in revenues, there is another one, also serious, and that is the continual, even though individually very small, reductions in basic traffic rates. The demand for greatly increased operating economy was never more pressing.

First, the quantity of fuel should be decreased; second, the need for a more intensive use of our present-day costly locomotives is very great; third, the railways are faced with an imperative demand for larger economies in operation. All three relate to the cost of fuel, which is composed very largely of bituminous coal. In short, a decrease in the quantity of coal used is a most essential factor in each of the three conditions.

How can this common factor be made more helpful to us in our solution of this problem? I think the experience gained on those railways which use fuel oil in their locomotives gives us a clue. This form of fuel has a multitude of advantages. While it is a much more elastic source of energy, it is also a more definite one, being accurately, easily and rapidly controlled. If the locomotives are intelligently designed, it gives high efficiency with light loads, and high efficiency and high capacity with heavy loads. Its combustion is more complete, and its losses, in consequence, less great than those which attend the burning of coal on grates. It is clean and inoffensive when burning. It is easily transported and stored. The delays attendant upon its use, while in terminals, are almost negligible. Best of all, it permits the operation of modern locomotives for long distances with heavy loads at high operating efficiency and with excellent fuel economy.

#### Further Tests of Powdered Fuel for Locomotives Suggested

The use of fuel oil is limited by the rapid fluctuation in its purchase price. Furthermore, locomotives equipped for burning fuel oil cannot be immediately transferred to coal-burning districts, as some delay results and some expense is involved in changing the firebox appliances from the use of liquid to the use of solid fuel. Is it not possible, then, to find some method in which the firebox arrangements for burning either liquid or relatively a solid fuel, can be much the same, a method where the advantages of liquid fuel can be retained with the low initial cost and the widespread source of supply that comes with the use of coal? I think there is; it is powdered fuel.

[Mr. Rodenbaugh commented on the progress in burning powdered coal in power plants and locomotives in Europe, and in power plants and at least one locomotive in this country, suggesting that the International Railway Fuel Association would do well to study and aggressively attack the problems presented by the use of this fuel. The paper closed with the following paragraph:—EDITOR.]

Finally, if powdered coal is used, the general

manager, that most harassed officer of the present day, will greet it with a smile, for it gives promise of enabling him to use a less costly coal, materially less of it, and at the same time he will find that his locomotives are not only being used with greater efficiency, but with less cost for repairs, and less time in terminal delays. With these decreases in cost and increases in efficiency he can then meet more successfully the determined attacks of his numerous competitors.

## The Development of Fuel Conservation on the Erie

By R. E. Woodruff  
Vice-President, Erie

The amount of coal burned on a railroad per unit of work is now recognized as a measuring stick of that road's efficiency.

When the campaign for fuel conservation was first inaugurated, efforts were concentrated on better firing. Accordingly, fuel supervisors were appointed and road foremen of engines were spurred into action to educate firemen to do better work. The whole campaign was turned over to these fuel supervisors and they did produce favorable results with engine crews.

In their endeavors to save coal these supervisors argued for better engine maintenance. To some extent their pleas were not heeded. The roundhouse foreman's job was to dispatch engines in shape to make a successful trip, i.e., without causing an engine failure, and he was not particularly interested in what he thought were the alibis of the fuel supervisors for not saving more coal. Whether the engine operated efficiently or not was a refinement not given much consideration by shop forces. There were very few, if any, records kept by any one at that time which reflected true operating conditions of locomotive efficiency.

There were many individual opinions regarding the efficiency of various types of locomotives. This was brought forcibly to attention when, during a period of depression, it was found necessary to store power because of lack of business. On the assignment sheet of one division were ten different kinds of freight engines. There immediately arose an argument as to which class of engine should be stored. The shop forces wanted to store the engines which were hardest to maintain because of peculiarities of design. The yardmaster wanted to store the smallest engines because they did not clear his yard as quickly. The chief dispatcher wanted the engines kept in service which made the best running time on the railroad. The enginemen asked that the engines be stored that rode the hardest. The road foremen wanted the engines kept in service that burned the least coal.

### Beginning of Fuel Conservation

There were no figures available showing which engines were the most efficient per thousand gross ton miles. Accordingly, tests were run and figures were obtained of the cost of maintenance, wages and fuel on a gross ton mile basis. The most expensive engines were white-leaded.

This was the beginning of real fuel conservation on our line. Cost studies were continued and spread to other divisions and it was immediately found there were great differences between locomotives of the same type. This led to better maintenance and gave the fuel supervisors something tangible to take up with shop forces. A great difference was found between enginemen and this led to better road supervision. When the



cost per thousand gross ton miles was computed it was found that, no matter how good a run an engineman made, if he did not have sufficient tonnage his cost was high, and this led to better train loading. Yard forces had been careless in building up trains. Chief dispatchers, as a rule, liked to see trains go a few cars light because they could run faster and keep out of the way of passenger trains.

By this time newer and larger locomotives were purchased and on some divisions the locomotives had become so large that operating difficulties developed. The tanks held but little more water and coal than the smaller engines, though the total evaporation and coal consumption were much greater. This resulted in more water stops. On most divisions it was necessary to take coal at some intermediate point. These factors tended to nullify the value in dollars and cents of heavier motive power.

Stokers were introduced on the smaller class of road power and this was at first looked upon with disfavor because the stoker engines seemed to burn more coal than the hand-fired engines and fuel supervisors freely stated that they could not make as good a showing with the stoker engines as they could with the hand-fired engines. By experience it was found that the stoker-fired engines were worked harder and could accordingly pull greater trainloads and that the net results were favorable.

Experiments were then made with longer engine runs to increase the productivity of each locomotive by the elimination of idle time. In some territories locomotives were run over two divisions. On others, engines were roundtripped over a single division within the sixteen hour period. This was found to be entirely practicable when the engines were in good mechanical condition,

and this led to better maintenance which had its influence in saving fuel.

### The Value of the Large Tender

Continual improvements have been made in locomotive design, syphons were being applied on some engines, others were equipped with superheaters, feedwater heaters and boosters. From a road efficiency standpoint, one of the most desirable innovations was the introduction of the large tanks containing 16,000 to 20,000 gallons of water, and 25 to 28 tons of coal. The application of these tanks to all freight engines on a division made it possible to eliminate the intermediate coaling station and on short divisions made it possible to run the division without a water stop. Experiments have been made with improved grates and considerable savings in fuel have been made from this source.

In bad water districts, treating plants were installed to eliminate boiler scale, to increase the life of boilers and to decrease the cost of maintenance. This resulted in a corresponding reduction in coal consumption. Experiments were also made by increasing and decreasing the size of cylinders on older types of engines, by changes in front-end arrangements, nozzles, brick arches and diaphragms. Dynamometer car tests were run to obtain figures on relative efficiency. Some locomotives were found to be so constructed that they developed their maximum horsepower at relatively slow speeds and were accordingly not so well adapted to fast freight service as to drag service. There was accordingly considerable shifting of locomotives from one division to another so as to get fullest possible use out of available motive power.

The next logical step was the development of a new locomotive, modern in every respect and of harmonized



1930 Officers, Executive and Advisory Committee Members of the International Railway Fuel Association

Seated (Left to Right): C. P. Dampman, Superintendent Fuel Conservation, Reading; W. L. Robinson, Superintendent Fuel and Locomotive Performance, B. & O.; T. C. Hudson, General Superintendent, Can. Nat'l; Secretary-Treasurer C. T. Winkless, Fuel Agent, C. R. I. & P.; Vice-President W. G. Black, Mechanical Assistant to the President, C. & O.; President W. J. Tapp, Fuel Supervisor, D. & R. G. W.; Vice-President C. H. Dyson, Fuel Agent, B. & O.; Vice-President J. M. Nicholson, Fuel Conservation Engineer, A. T. & S. F.; T. Duff Smith, Lake Forwarding Agent, Can. Nat'l; H. T. Bentley; J. B. Hurley, General Road Foreman of Engines and Fuel Supervisor, Wabash.—Standing (Left to Right): J. E. Davenport, Assistant to Assistant General Manager, N. Y. C.; R. S. Twogood, Assistant Engineer, Office of General Manager, Southern Pacific; J. D. Clark, Chief Fuel Supervisor, C. & O.; P. E. Bast, Fuel Supervisor, D. & H.; C. Roberts, Assistant Road Foreman of Engines, Pennsylvania; J. R. Jackson, Engineer of Tests, Missouri Pacific; M. Macfarlane, General Fuel Inspector, N. Y. C.; R. Collett, Fuel Agent, St. L.-S. F.; E. E. Chapman, Engineer of Tests, A. T. & S. F.; L. E. Dix, Fuel Supervisor, Texas & Pacific; C. I. Evans, Chief Fuel Supervisor, M-K-T; Publicity Director E. L. Woodward, Western Mechanical Editor, *Railway Age*.



design. These engines had larger driving wheels, making faster speed possible, adequate boilers for hill-climbing and for continued use of the booster, with syphons, feedwater heaters, improved grates, and all the appliances which tests had demonstrated would improve the efficiency of the locomotive. This new locomotive, when put into use, made a radical change in operation. Trains covered entire divisions without stops; trainloads increased to 125 cars.

The advent of longer trains and the necessity of pumping up air after coming to a stop brought out the necessity of eliminating all unnecessary stops. Accordingly, trackmen have been trained to avoid stopping trains so far as possible, car departments keyed up to eliminate car failures, operators and dispatchers educated to avoid stopping trains for orders and way-freights and pick-up trains were made to keep out of the way of the tonnage trains. The habit of having through trains set off cars at local stations was discontinued as far as possible. All of these factors reduced coal consumption.

Switch engines have also been given attention. A modern switch engine now operates continuously 22 to 23 hours out of each 24, instead of 12 or 16 hours as was customary with the older type. Passenger engines run 300 to 400 miles before being cut off their trains.

#### Train Loading and Power Assignment

There are two major factors in coal conservation which have to do particularly with the so-called transportation department. One is the proper loading of trains. When fast freights are given a fixed percentage of full tonnage there is likely to be considerable waste in efficiency. It has been found desirable to have the tonnage of each train decided by the chief dispatcher with due regard for the circumstances surrounding the operation of that train.

The other question is; the assignment of power. It is very easy for any organization to follow the lines of least resistance, and keep more engines in service than are necessary. When transportation and shop forces work closely together and prepare a program of what motive power will be required 12 or 24 hours ahead, shop work can be so regulated as to prevent engines being fired up until needed.

Many of the things mentioned as being important in coal conservation have been physical things. One reason for decreased coal consumption has been the change in attitude of the entire official family. Old departmental prejudices have been wiped out. Shop forces, instead of repairing engines to make a single successful trip, are now interested in what the locomotives produce. Mechanical officers are held jointly responsible for coal performance.

It has been found desirable to develop a standard basis of coal consumption for each operating division. With the knowledge of pounds of coal per thousand gross ton miles used for each month the previous years, an estimate is made of what the expected figures will be for the current year. These figures are developed jointly by superintendents, road foremen of engines and master mechanics, and are criticised by district road foremen and the superintendent of motive power. The past years' records and the forecast for this year are plotted on a chart. Each month the actual figures are put in. Every officer on the railroad knows monthly what was accomplished and whether the basis was reached or beaten. In addition, a weekly coal statement is prepared showing the consumption by weeks so that if a bad record is made in any week it is not permitted

to go very long before all the officers who have to do with that division are after it to locate the cause and apply the remedy. Not only are the figures interesting and useful but the moral effect of the weekly statement is beneficial.

When every officer eliminates departmental prejudices and works intelligently and enthusiastically for the ultimate efficiency of a railroad as a whole, comparative coal statistics on that railroad are sure to become more favorable.

### Front-Ends, Grates and Ashpans

Of the various subjects considered during the year by the standing Committee on Front-ends, Grates and Ashpans, it has concluded to present in its report only two, namely: (1) Present practice with respect to the retention or elimination of superheater dampers, and (2) The use of standing tests of locomotives as a means of studying draft appliances and front-end performance.

#### Elimination of Superheater Dampers

Although for several years certain roads have operated locomotives without superheater dampers, the committee has been impressed with the continued difference of opinion as to the advisability of this practice; and it has therefore seemed desirable to collect and present to the Association information concerning current practice with respect to the elimination or retention of dampers.

An inquiry was accordingly sent to 69 of the larger railroads of Canada and the United States, and 64 roads in reply thereto have given the main facts about their practice. The only large companies not replying were the Rock Island and the Southern. The main purpose of the inquiry was to determine to what extent the use of superheater dampers has been abandoned or is being abandoned, and to learn the reasons for their elimination. The roads replying to the inquiry have in service 54,726 locomotives or about 85 per cent of the total number in service in the two countries. These locomotives are classified as follows: Road locomotives burning coal, 38,972; road locomotives burning oil, 5,229; yard locomotives burning coal, 9,504; yard locomotives burning oil, 1,021.

Of these 54,726 locomotives 41,284 (75 per cent) are equipped with superheaters whose distribution is shown in one of the tables.

The main facts concerning damper removal are presented in a table. The reports furnished by 64 railroads make it clear that under the removal policies

Distribution of Superheaters by Types

Number of Superheaters in Service	The Superheater Company's		Emerson and Vaughan-Horsey superheaters
	Type A	Type E	
On road locomotives burning coal . . .	27,611	2,091	2,008
On road locomotives burning oil . . . .	4,033	148	
On yard locomotives burning coal . . . .	4,618	...	225
On yard locomotives burning oil . . . . .	550	...	
Totals . . . . .	36,812	2,239	2,233
Grand Total . . . . .			41,284

now in force on 32 roads, superheater dampers have been removed or are in process of being removed from about 56 per cent of the 36,812 Type A superheater locomotives now in service on the reporting roads; that is, dampers will soon have been removed from nearly 21,000 of these locomotives.

*Other Types of Superheaters.*—Four of the roads replying to our inquiry report in service 2,233 superheaters of other than the A or E types above discussed. The Canadian Pacific has in service 1,253 locomotives

equipped with Vaughan-Horsey superheaters, from which the dampers have been removed. The Canadian National have in service 434 "other types" of superheaters which, although not specifically so designated, the committee has assumed to be the Vaughan-Horsey type. This system's general policy of retaining dampers applies to these superheaters. The Chicago, Burling-

**Summary of the Policies of Sixty-four Railroads with Respect to the Removal of Dampers from Locomotives Equipped with Type A Superheaters**

Group no.	Damper removal policy	Number of roads in group	Number of locomotives equipped with Type A superheaters in service on these roads	Percentage of locomotives equipped with Type A superheaters
I	Retaining All Dampers	24	9,465	25.7
II	Removing All Dampers	25	20,146	54.7
III	Removing Dampers from Certain Kinds of Engines, or in Certain Types of Service	7	2,925	8.0
IV	Policy Not Yet Defined	8	4,276	11.6
	Totals	64	36,812	100.0

ton & Quincy has 546 Emerson superheaters in service. If these superheaters were originally equipped with dampers, the dampers have been removed under the general removal policy of this road.

#### Standing Tests Offer Practical Means For Studying Draft Appliances

A standing test of a locomotive is one in which the engine machinery is disconnected and the boiler alone is operated, the steam generated being passed (either wholly or in part) through the regular exhaust nozzle to produce draft in the usual way. Such tests have long been used to study general boiler performance, and their simplicity and low cost as compared with road tests commend their use. Their use for the study of draft appliances and front-end performance is relatively recent, although the advantages flowing from their simplicity are in no connection more marked than in front-end tests. The Committee on Front-ends Grates and Ashpans has thought it timely to include in its report a discussion of such tests and it therefore asked George W. Armstrong, a member of the committee who has had extensive experience in conducting standing tests, to prepare such a discussion.

The drafting of locomotives is still an inexact process. The fundamental requirements have been fairly well defined, but the adjustment of these fundamentals to meet operating demands is a problem which until recently was solved only by cut-and-try methods under road conditions. Many of you undoubtedly have vivid recollections of disastrous trips, when trying to adapt some new type of draft appliance to engines on your road. These experiences have a bad effect on operation, due to steam failures, slow train movement and stalled trains; and, what is more important, a bad psychological effect on enginemen and firemen, which it may take weeks to overcome, even after a successful solution of the problem has been attained.

Standing tests of locomotives have been resorted to in an endeavor to avoid these trying experiences. Such tests are essentially locomotive boiler tests; they can be made at any shop or enginehouse where facilities are available for conveniently supplying coal and water. The locomotive is drafted by a continuous discharge of steam through the exhaust nozzle. The piston is removed and the gland opening is closed by suitable means, so that the cylinder serves as an expansion chamber. The back-pressure is maintained constant by regulation with the piston valve, used as a gate valve. A turnbuckle is attached to the valve-stem crosshead and the guide yoke, for fine regulation of the steam

opening through one of the ports. If accuracy of test results comparable with road conditions is required, the steam flow should be regulated by the valves on both sides of the engine. However, for the study of draft appliances, satisfactory comparability can be secured by means of blowing the steam through one cylinder only.

The natural first reaction to this method of testing is: "You don't have the pulsations of exhaust which are present in locomotive operation." A moment's thought, however, will serve to show that above a relatively slow speed (where one exhaust passes out of the stack before the next enters) the stack is continuously filled, even with a pulsating exhaust. Consequently it follows, as stated years ago by a committee of the American Railway Master Mechanics' Association and the late Dr. W. F. M. Goss as one conclusion of the Purdue tests, that "the draft produced is independent of the period or beat of the exhaust and dependent solely upon the rate of steam flow per hour."

[The committee here inserted 13 charts and discussion illustrating in detail the use of standing tests to develop information of practical value regarding practically all phases of locomotive boiler performance.—EDITOR.]

Standing tests offer a simple and effective means of improving the design of front-ends and nozzles. The relation of draft to back-pressure is a measure of draft-producing efficiency, and this efficiency is a reliable indication of the relative value of different nozzles and stacks. The relation of back-pressure to evaporation is a measure of the practical value of any nozzle, since this relation is a measure of the nozzle's ability to sustain combustion and, therefore, of its effect on boiler capacity.

In the last analysis, the value of any nozzle and stack combination is its entraining power, and since the entraining power of the jet is dependent upon the nozzle characteristic and its relation to the stack as a combining tube for the ejector combination, these factors can be fully studied by this method of standing test. This relation is more or less definite for the best efficiency of entrainment and ejection of gases and steam; and therefore, having determined the factors entering into the solution of the relative merits of the different types of nozzles, the determination of the actual area of the nozzle orifice is only a question of adapting the actual size of opening to the requirements of road operation and fuel.

The problem of front-end study is primarily one of determining the fundamentals of the relation between stack and nozzle elements, the relative merits of different types of nozzles, the resistance losses between the front-end and the firebox, and the possibility of reducing these losses. The standing test offers the best method for this study. Uniformity of conditions can be maintained, the effect of minor changes can be observed, and the road performance can be predicted without incurring either the difficulties of procedure or the uncertainties in the results of road tests. It should be added that standing tests are suitable not only for the study of front-end problems, but for all others in which boiler performance alone is involved; such as the performance of feedwater heaters, syphons and stokers.

The report was signed by Professor Edward C. Schmidt, *University of Illinois*, Chairman; George W. Armstrong, *Bethlehem Steel Company*, W. R. Beasom, *Pennsylvania*; H. A. Boyer, *Erie*; J. S. Breyer, *Southern*; E. C. Fogh, *National Air Control Company*; V. L. Jones, *Consulting Mechanical Engineer*; G. H. Likert, *U. P.*; J. L. Ryan, *St. L.-S. F.*; L. W. With-



row, C. & O.; E. G. Young, *University of Illinois*, and F. Zeleny, C. B. & Q.

### Discussion

P. E. Bast, fuel engineer, Delaware & Hudson, said that the Wooten firebox locomotives on the D. & H. were all of the Consolidation type and the throat sheets so shallow that it was impossible on most to apply a brick arch. Consequently the gas temperature at the back ends of the flues was so high they had found it impossible to eliminate dampers.

G. H. Likert, fuel engineer, Union Pacific, outlined tests run on his road for a period of years, with dampers eliminated, and, as a result of that experience, the Union Pacific has since removed all dampers.

W. J. Black, assistant to the president, Chesapeake & Ohio, said that on some locomotives, when the damper is removed, an increase in superheated steam temperature can be observed.

W. A. Buckbee, Superheater Company, outlined the experience of his company and stated that their conclusion was that dampers could not be removed without trouble being experienced when cast-iron return bends are used. With the forged return bends they have not observed any detrimental effect.

### Dynamometer Car Vs. Standing Tests

D. J. Sheehan, special engineer, Chesapeake & Ohio, described the value of the dynamometer car in studying road operation and developing drawbar pull characteristics of the locomotive. He mentioned the increased tendency of using standing tests for valuable study of boiler characteristics, but emphasized the limitations of standing tests which do not take into consideration the rapid and frequent changes encountered in road service.

N. L. Wiggin, chief fuel supervisor, the Boston & Maine, outlined his observations as to the value of the standing tests made on that road with a K-8-C locomotive in nozzle and front end studies. He emphasized the close agreement of standing tests with observed road results. The value of a dynamometer car in developing locomotive drawbar-pull-speed curves and in checking tonnage ratings was mentioned by Mr. Wiggin, but he said that, owing to the inability to maintain constant working conditions for any length of time, the dynamometer car test results include many variables and are proportionally hard to interpret. Mr. Wiggin added that if the dynamometer car shows that the drawbar-pull-speed characteristics are not what should be expected, because of boiler limitations, the standing test can be used to determine what changes are necessary. The consensus of this part of the discussion was that the use of a dynamometer car, supplemented by standing tests for boiler characteristic studies, will permit a railroad to develop the maximum in fuel economy and performance from its locomotives.

C. A. Seley, consulting engineer, contributed an abstract of a paper to be presented by H. N. Gresley, chief mechanical engineer, London & North Eastern, at the coming International Railway Congress, outlining a method developed for integrating smokebox draft.

H. Morris, superintendent of fuel and locomotive performance, Jersey Central, described the benefits derived by his road in developing feedwater-heater value through standing tests and the use of these results in conjunction with water figures taken over the division in actual service between points where locomotive operating requirements changed markedly. The coal consumption was calculated for the respective water rates,

and a coal-burning curve developed as a total divisional consumption, which checked closely with actual observed fuel charge-outs. The information thus developed by standing tests and their tie-in with road operation enabled him to arrive at a comparison of benefits derived from feedwater heater use, in conjunction with varying operating conditions, which was interesting and instructive and would have been incapable of development otherwise.

## Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended May 3 amounted to 942,899 cars, an increase of 35,725 cars as compared with the preceding week. This was, however, a decrease of 109,036 cars as compared with the corresponding week of last year and of 35,154 cars as compared with 1928. Loading of grain and grain products showed an increase as compared with last year and loading of ore and coke showed an increase as compared with 1928, but other commodity classifications showed reductions as compared with both years. All districts also reported reductions as compared with last year, while all except the Northwestern reported reductions as compared with 1928. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

### Revenue Freight Car Loading

Week Ended Saturday, May 3, 1930

Districts	1930	1929	1928
Eastern	220,250	248,454	234,129
Allegheny	195,550	220,304	199,991
Pocahontas	53,890	56,045	54,382
Southern	137,668	147,662	148,519
Northwestern	130,817	159,250	124,679
Central Western	130,158	142,879	137,922
Southwestern	74,566	77,341	78,431
Total Western Districts	335,541	379,470	341,032
Total All Roads	942,899	1,051,935	978,053
Commodities			
Grain and Grain Products	39,056	38,784	43,701
Live Stock	25,884	28,317	28,224
Coal	148,135	156,002	154,359
Coke	10,909	12,350	10,308
Forest Products	57,036	68,653	65,571
Ore	32,396	66,512	16,090
Merchandise L.C.L.	250,862	265,585	263,837
Miscellaneous	378,621	415,732	395,963
May 3	942,899	1,051,935	978,053
April 26	907,174	1,051,885	963,007
April 19	892,881	1,005,880	945,289
April 12	911,310	973,152	912,659
April 5	907,928	958,225	919,352
Cumulative totals, 18 weeks	15,832,203	17,194,605	16,510,556

The freight car surplus for the last week in April averaged 427,925 cars, a decrease of 11,446 cars as compared with the week before. The total included 203,192 box cars, 168,930 coal cars, 28,077 stock cars and 15,790 refrigerator cars.

### Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended May 3 totaled 59,027 cars, an increase over the previous week of 2,366 cars but a decrease of 8,440 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
May 3, 1930	59,027	37,052
April 26, 1930	56,661	34,052
April 19, 1930	52,009	35,501
May 4, 1929	67,467	44,164
Cumulative Totals for Canada		
May 3, 1930	1,021,625	660,951
May 4, 1929	1,134,166	782,841
May 5, 1928	1,122,880	718,860



How to

# Forecast the Volume of Traffic

*Description of a method of five years' successful use—An estimate of revenue and traffic for 1930*

By William Austin

**F**ORECASTING is the first essential of budgeting. In order intelligently to plan in advance maintenance, operation, and construction expenditures, it is first necessary to determine with some degree of accuracy the amount of income that will be realized in the months ahead. This is a difficult problem, and although it has not yet been solved in a manner that is wholly satisfactory, a great deal of attention has been given to it in recent years, as a result of which, through the development of new methods of statistical analysis <sup>(1)</sup> and through additional knowledge of the business cycle, new points of view and better methods of attack are available to those by whom the problem must be met. The manufacturing industries have been quick to sense the value of the new developments. On the other hand, the railroads generally have not yet availed themselves of the results of the recent work in this field, although, because of the "close relationship of railroad traffic to general prosperity—which arises because of the character of the service that the railroad performs in our economic organization . . . few, if any, industries possess greater possibilities for utilizing the modern statistical and forecasting methods developed in the study of the business cycle." <sup>(2)</sup>

## Method Applicable to Individual Roads

The possibilities of these methods are illustrated in the present article which briefly outlines a method of forecasting which for several years has been applied to the total traffic and revenues of the United States with perhaps as accurate results as it is reasonable to expect, or necessary to obtain, from forecasts made a year in advance. (See Table I.) While the application of the method to the railroads as a whole is described here, the method is also applicable to estimating the traffic and revenues of individual roads.

The first step in the forecasting method is the analysis of the basic traffic and revenue data to determine their cycles. To make this method of analysis entirely clear, it is described somewhat fully. For illustrative purposes carloading data are used.

In the upper section of Chart 1 weekly average carloadings per month have been plotted for the years 1920-29. Our ultimate aim is the projection of this irregular line through 1930. In spite of its irregularity, the line exhibits very clearly two important tendencies. In the first place, as a whole, it slopes gently upwards towards the right, showing the tendency of carloadings gradually to increase over a period of years. In the second place may be noted the tendency of the line each year to rise from a low point in January to a peak in

October, and then to fall abruptly to the lowest point of the year in December. These tendencies, toward year-to-year growth and toward seasonal variation, obscure the cyclical tendency which it is the purpose of our analysis to discover. Accordingly, the original data must be adjusted for year-to-year growth, or trend, and for seasonal variation in order to reveal the carloading cycle.

## Second Step—Trend Line Taken as Base

The year-to-year growth, or trend, of carloadings for the short periods we are concerned with here, may be represented in graph form by a straight line for which numerical values can readily be computed from the original data. Such a trend line has been drawn through the upper section of Chart 1. By dividing the trend figure for each month into the corresponding carload-

Table I—Estimated vs. Actual Carloadings and Gross Revenues for Previous Years

Year	Estimated Carloadings (Thousands)	Actual Carloadings (Thousands)	Percentage of Actual to Estimated
1925	50,260	51,224	101.9
1926	53,352	53,099	99.5
1927	53,593	52,370*	97.7
1928	50,250	51,590	102.7
1929	54,750	52,790	96.4
	Gross Revenues (Millions)		
1927	\$6,372	\$6,210	97.5
1928	6,050	6,178	102.1
1929	6,567	6,357**	96.8

\* To the published figure for this year have been added the carloadings for the week ended Jan. 1, 1927 to obtain a figure comparable with the estimate, which covered 53 weeks.

\*\* December revenues estimated at 474 millions.

ing figure, a series of percentages is obtained which is representative of the original carloading figures, adjusted for trend. These percentages are plotted in the middle section of Chart 1, where the trend line is now horizontal at 100 per cent, and the monthly percentages fluctuate above and below it, the seasonal variations being the most prominent feature of the line as a whole.

The computation of percentages representing the seasonal variations is a somewhat more complicated process than that for trend, but upon completion it gives for each month the percentage relationship of that month to the monthly average for the year. These percentages of seasonal variation for carloadings are shown in Chart 2. The effect of seasonal variation is eliminated by subtracting the seasonal variation percentage for each month from the percentage given in the middle section of Chart 1. The result of the process is shown by the heavy irregular line at the bottom of that chart. The irregularity, which is due to factors not amenable to statistical methods, has been smoothed out by computing a five-months' moving average, indicated on the chart by a thin line. For the practical purpose of forecasting, this moving average line may be re-

(1) The methods referred to are especially those associated with the name of Prof. Warren M. Persons. These methods are illustrated in the present article. See also the article referred to in Note 2.

(2) Homer B. Vanderblue in "Railway Traffic and the Business Cycle," *Railway Age*, Vol. 76, p. 783. A valuable contribution to the subject.

garded as the carloading cycle curve. The 100 per cent line in this portion of the chart represents both trend and seasonal variation, and may, for convenience, be termed "normal."

### Third Step Reveals Cyclical Tendency

The carloading data, having been adjusted for trend and seasonal variation, now show very clearly a cyclical tendency, that is, a tendency to swing above and below normal over a period, which, from peak to peak, or

Table II—Estimated Traffic and Revenues of the United States for 1930. (By Months.)

Month	No. of Weeks	Carloadings (Thousands)		Revenue Ton Miles (Millions)		Gross Revenues (Millions)	
		Monthly	Total to Date	Monthly	Total to Date	Monthly	Total to Date
Jan.	5	4,228	4,228	32,900	32,900	\$448	\$448
Feb.	4	3,410	7,638	30,400	63,300	417	865
Mar.	4	3,584	11,222	33,300	96,600	463	1,328
Apr.	5	4,406	15,628	30,700	127,300	448	1,776
May	4	3,757	19,385	33,800	161,100	476	2,252
June	4	3,985	23,370	34,000	195,100	499	2,751
July	5	4,876	28,246	35,600	230,700	518	3,269
Aug.	4	4,230	32,476	38,400	269,100	551	3,820
Sept.	4	4,342	36,818	40,000	309,100	563	4,383
Oct.	5	5,673	42,491	43,500	352,600	591	4,974
Nov.	4	4,113	46,604	39,200	391,800	543	5,517
Dec.	4	3,650	50,254	36,400	428,200	526	6,043

Sources of Basic Data:

Carloadings: American Railway Association.

Revenue Ton Miles: Interstate Commerce Commission.

Gross Revenues: Bureau of Railway Economics.

from valley to valley, for the carloading data used, averages not far from three years. Revenue ton-miles, passenger-miles, and freight, passenger, and gross revenues, are found upon analysis to follow a similar cyclical course, and this will be found to be true also for the traffic and revenue data of most individual roads. Such analysis of the basic data constitutes the first forecasting step.

Having progressed thus far, our problem is found to be somewhat simplified. For our purpose will have been accomplished if we can project through 1930 the smoother line of the cycle curve, rather than the irregular line of the original data shown in the top section of Chart 1. The cycle curve, once projected, can readily be translated into carloading figures by a reversal of the process by which adjustment was made for trend and seasonal variation. To be sure, this smooth line ignores those month-to-month fluctuations which are characteristic of the original cycle curve shown at the bottom of the chart, but the forecasting of such deviations from a regular course is neither possible nor necessary. Even in the case of the best of forecasts it is to be expected that the actual figures will fluctuate from month to month above and below the forecast. A fair test of the quality of a forecast, it may be said, is the amount of deviation of actual from estimated figures, based on total-to-date data.

### Character of Prior Cycles

We are now ready for another step. Looking once more at the cycle curve we find that railway traffic, as measured by carloadings, reached a cyclical peak just before the middle of 1929 and since then has been declining. The curve also shows that within the decade covered, three previous periods, 1920-21, 1923-24, and 1926-27, were similarly characterized by a decline after a peak. A comparison of these periods is given in Chart 3, in which the peak of each of the earlier periods is made to coincide with the present peak (June, 1929). The figures for November and December, 1929, are actual cycle percentages, the five-month moving av-

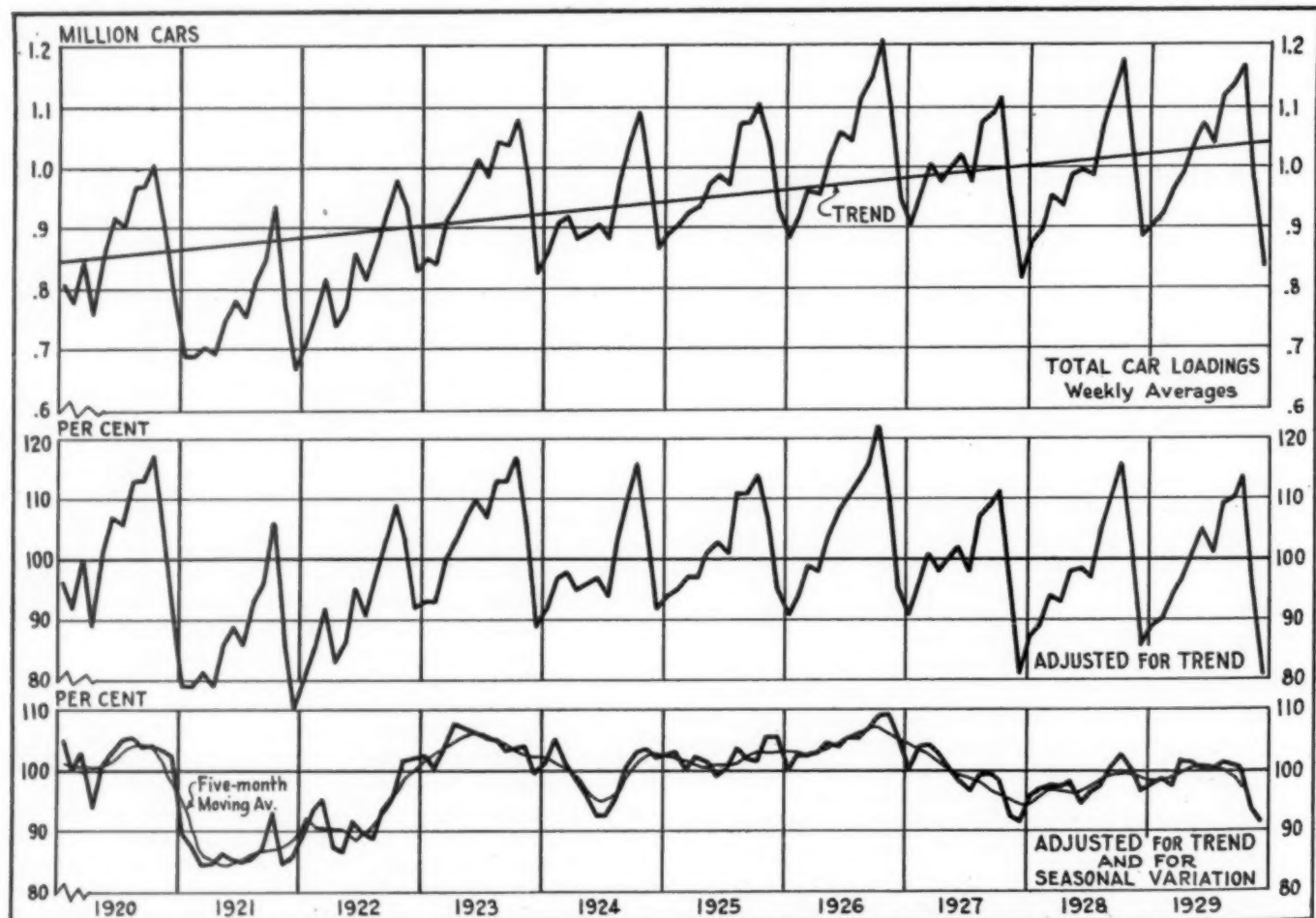


Chart 1. Total Carloadings of United States. Illustrating Steps in Analysis to Develop Carloading Cycle



erage not being available beyond October. Undoubtedly the moving average would be somewhat above the figures used for these two months, so that the present decline is slightly exaggerated in the chart. Differences between the periods, as to height of peak, abruptness

Table III—Estimated Total Carloadings of the United States for 1930. (By Weeks.)

Week Ending	Weekly	Cumulative	Week Ending	Weekly	Cumulative
	(Thousands)			(Thousands)	
J 4	718	718	J 5	821	24,191
11	876	1,594	12	998	25,189
18	890	2,484	19	1,011	26,200
25	876	3,360	26	1,023	27,223
F 1	868	4,228	A 2	1,023	28,246
	4,228			4,876	
F 8	865	5,093	A 9	1,031	29,277
15	859	5,952	16	1,041	30,318
22	799	6,751	23	1,073	31,391
M 1	887	7,638	30	1,085	32,476
	3,410			4,230	
M 8	898	8,536	S 6	972	33,448
15	890	9,426	13	1,112	34,560
22	894	10,320	20	1,120	35,680
29	902	11,222	27	1,138	36,818
	3,584			4,342	
A 5	842	12,064	O 4	1,132	37,950
12	852	12,916	11	1,139	39,089
19	868	13,784	18	1,148	40,237
26	896	14,680	25	1,147	41,384
M 3	948	15,628	N 1	1,107	42,491
	4,406			5,673	
M 10	944	16,572	N 8	1,078	43,569
17	950	17,522	15	1,062	44,631
24	976	18,498	22	1,057	45,688
31	887	19,385	29	916	46,604
	3,757			4,113	
J 7	1,002	20,387	D 6	1,001	47,605
14	995	21,382	13	976	48,581
21	995	22,377	20	933	49,514
28	993	23,370	27	740	50,254
	3,985			3,650	

and extent of decline, and nature of recovery, are very apparent. Obviously, these differences are the reflection of differences in the economic conditions surrounding each of the periods, so that by making a review and comparison of present and past economic conditions we will be in a position to frame an opinion as

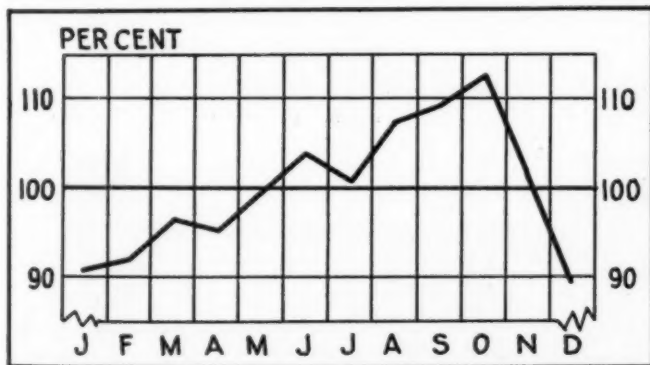


Chart 2. Seasonal Variations of Total Carloadings of United States

to the probable course of the carloading cycle through the next twelve months. Such procedure constitutes the next step.

The review must cover approximately the first seven months of each decline. The data to be reviewed include such items as: production in the major industries, in mining and agriculture; building construction; money and credit conditions; domestic and foreign trade; commodity prices; employment and wages. Not all of these have a direct bearing on railway traffic, but all

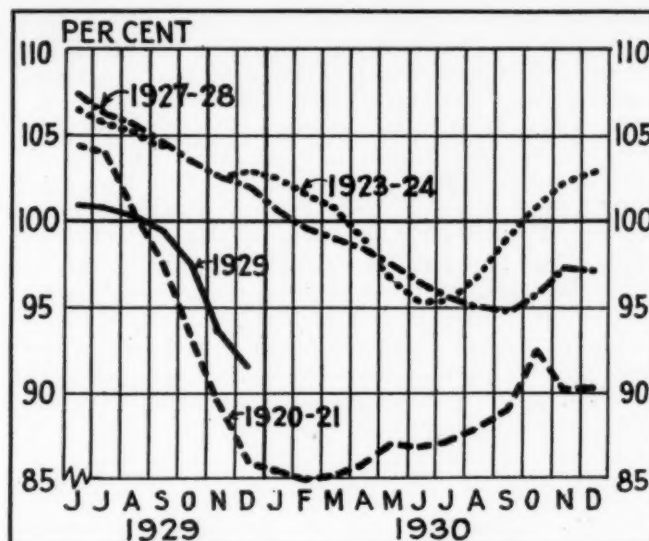


Chart 3. Comparison of Similar Carloading Cycle Periods

are necessary for a complete understanding of the economic situation. The basic data are readily available in financial magazines and in government publications. In using the data it is essential that allowance be made for trend and for seasonal variation wherever these factors are present, while the necessary comparison is greatly facilitated not only for the immediate forecast but also for those made in the future by plotting in graph form such of the data as are adaptable to that mode of statement.

#### Basic Economic Conditions Differ With Periods

The comparison of periods discloses a fundamental agreement in the economic conditions surrounding each, yet, as we should expect, there are also important differences. Some factors are found to be common to all periods; others are peculiar to one; while still others present in more than one, have greater significance in one period than in another. Thus, for example, a decline in the production of iron and steel is characteristic of all four periods; speculation in commodities, with consequent accumulation of inventory, was especially prominent in 1920; the stock market decline of 1929 was more severe than any previous decline; the status of the automobile industry has attained greater relative importance in 1929 than it possessed in 1920. The appraisal of the relative importance of the major differences noted in making the comparison, and of their probable composite effect in the immediate future leads us directly to our final goal. Such appraisal depends largely on the experience and judgment of the forecaster. Yet because of the preceding process of marshalling and analyzing the relevant data, the field within which these personal elements are operative is considerably narrowed.

#### Car Loadings Soon to Show Increase

This second part of the forecasting process involves more detail than it seems desirable to include in the present article. It must be sufficient at this time for the writer to state the conclusion to which he has come as a result of following the method described. It is believed carloadings will continue to decline, although at a more moderate rate, for three or four months, and will then turn upwards, continuing to increase throughout the remainder of the year. Expressed in terms of Chart 3, the cycle curve will reach 90 per cent, that is,

ten per cent below normal, in April, and will then turn upwards, registering two per cent below normal in December. Translated into carloading figures, this represents a total of 50,254,000 for the year.

The entire forecasting process need not be repeated for each item of traffic and revenues. The general trend as forecast for carloadings can usually be applied also to these other data, and the resulting forecasts modified, if necessary, by the percentage relationship, which obtain between the various items, taking into account the trend of these percentages as indicated by comparisons over a period of years.

Monthly figures for the forecasts of carloadings, revenue ton miles, and gross revenues, for the year 1930 are given in Table II, and weekly carloading figures in Table III.

## C. & O. Purchase Office Is Built to Please

**T**HE new offices of the director of purchases and stores of the Van Sweringen lines in the Union station at Cleveland have aroused comment for the comforts embodied in the reception room for visitors. Contrasted with the stuffy and otherwise uninviting waiting rooms not infrequently found, the Chesapeake & Ohio has recognized the strategic place of the purchasing department waiting room as a point of con-



The Typist is at the Service of Visitors Desiring to Write Letters or Telegrams

tact between the railway and the public by providing a reception room for callers that is lacking in nothing which could reasonably be desired by the visitor.

The room is about 20 ft. wide and 30 ft. long and has two large windows which offer an unobstructed view of a large portion of the city. It is finished in walnut throughout, has tinted walls hung with parlor pictures and is carpeted in heavy plush. The furniture includes arm chairs of walnut, and a walnut table where the callers may find current magazines and also materials for letter writing. Chilled and filtered water for drinking is provided. A typist is seated at a walnut desk and it is her work not only to greet callers courteously and announce them but to put herself at their service for any letters or wires they might wish to dictate and have mailed while waiting for an audience. Visitors also have the privilege of using the telephone at her desk for making office or outside calls.



A View of the New Reception Room

Callers are received promptly. Should occasion arise where delay is unavoidable, the visitors are notified and the office goes so far in the handling of out of town visitors as to secure the hotel and room number so they can subsequently be reached and appointments made with the least delay and inconvenience. Approximately 35 visitors are received a day in the new offices and the average waiting time is said to be not more than five minutes.

The reception room is one of five rooms devoted to the general direction of the purchases and stores work of the Chesapeake & Ohio, Pere Marquette and Hocking Valley. The other rooms comprise the director's office, the office of the supervisor of stores and the clerical office. The offices are furnished in walnut throughout and all filing cabinets and similar equipment are steel.

THE SOUTHERN OF GREAT BRITAIN has acquired a minority stock interest in Imperial Airways, Ltd., under the air powers granted to British railroads by the government last year, according to Department of Commerce reports. The two companies, although recognizing each other's desire to develop their own services, agree to be mutually helpful in such matters as sale of through tickets, display of advertising material, etc., while any air services inaugurated by the Southern in the future will be operated by Imperial Airways.

\* \* \*



On the New York, New Haven & Hartford



# Annual Session of Transportation Division Held at Cleveland

*Demurrage and per diem rules clarified by revisions—  
Principles for short routing developed*

**A**T the eleventh annual session of the Transportation Division, American Railway Association, 160 railroad officers listened with interest to the several addresses and reports presented during the three-day meeting held at the hotel Cleveland, Cleveland, Ohio, May 7 to 9, 1930.

The first two days were devoted to a discussion of several questions that had been formally presented to the different committees and on the last day, in addition to the regular committee reports, the members were addressed by W. P. Bartel, director, Bureau of Service, Interstate Commerce Commission, and M. J. Gormley, executive vice president, A. R. A. In the absence of G. E. Patterson, vice president, Illinois Central System, J. F. Porterfield, general superintendent transportation, Illinois Central, presented Mr. Patterson's prepared address on Heavier Loading of Cars. An abstract of Mr. Patterson's address will appear in a later issue.

## Mr. Gormley Discusses Car Utilization

Mr. Gormley, in his address, discussed briefly the car situation at the present time. He recalled a prediction made in 1927 that, with the increased efficiency in handling, unloading and loading of cars, traffic could be handled by 100,000 less cars than existed at that time. He pointed out that, at the peak of traffic in 1929, the railroads of the United States had 100,000 less cars than in 1927 and succeeded in handling the traffic with a car surplus that never fell below 130,000. Mr. Gormley ventured a further prediction that, with continuing efficiency, the time would come when the traffic would be handled with 200,000 less cars than were in existence at the high point of freight-car ownership and that the railroads would be rendering better service than they are today.

Mr. Gormley discussed the question of heavier loading of cars and commented on Mr. Patterson's paper. In concluding his remarks on this subject he said that the car service division has done a lot of work on this problem and the conclusion has been reached that whether or not equipment is loaded heavily depends principally upon the shipper and not on the receiver. The responsibility, he said, rests on the railroads to assume the obligation of directing the attention of shippers to the value of heavier car loading.

## Election of General Committee Members

The following members of the General Committee were elected to serve until May, 1933:

Eastern Territory—J. J. Bernet, president, Chesapeake & Ohio.

New England Territory—J. O. Halliday, manager transportation, New York, New Haven & Hartford.

Southwestern Territory—A. W. Towsley, assistant to vice president, Chicago, Rock Island & Pacific.

Canadian Territory—D. Crombie, chief of transportation, Canadian National.

The committee on Demurrage, Storage, Reconsignment and Diversion of which J. F. Porterfield, general superintendent transportation, Illinois Central System, is chairman, reported as follows: During the past year the committee has considered a number of applications for changes in the demurrage and storage rules, or exceptions thereto, alleged to be necessary to meet local conditions or to cover specific commodities, and has disposed of practically all of them either by correspondence or negotiations through sub-committees without the necessity for making any change in the rules.

There is shown below statement of demurrage collections by Class I railroads in the United States for the past five years:

Year	Carrier lines	Switching and terminal lines	Total
1924	\$21,032,518	\$ 916,465	\$21,948,983
1925	20,391,640	1,093,265	21,484,905
1926	21,903,157	872,432	22,775,589
1927	18,472,560	561,845	19,034,405
1928	16,957,925	554,768	17,512,693

The committee's previous reports have made reference to cooperative efforts being made by shippers and receivers toward reducing delays to refrigerator cars loaded with fruits and vegetables. While, no doubt, these efforts have been productive of some results, no general improvement has been made in reducing the

## Per Cent of Refrigerator Cars Released Within Free Time

1925	72
1926	68
1927	67
1928	64
1929	64

delays to cars loaded with these commodities while held awaiting unloading or reconsigning. Reports received by the Car Service Division for important receiving points in times of heavy loading are shown in the table.

The best available information indicates that less than 10 per cent of the total cars loaded with other classes of commodities are held beyond the free time, while as high as 36 per cent of the refrigerator cars loaded with fresh fruits and vegetables awaiting reconsignment or unloading are being detained beyond free time.

The committee understands that this question is receiving very active consideration at the present time by the General Committee with the view of reaching some definite conclusions.

In considering the question of mailing arrival notices on Sundays and legal holidays, the committee recommended that, where practicable, arrival notices should be mailed on Sundays and legal holidays, the same as on any other day, as the prompt issuance of notices is in the interest of both car and track efficiency. A number of changes in the demurrage and storage rules were recommended, most of them in the interest of clarification or to meet suggestions from the Interstate Commerce Commission, Division of Tariffs.

The Committee on Car Service, of which J. L. Brown, general superintendent transportation, Chicago, Milwaukee, St. Paul & Pacific, is chairman, reviewed

changes in and new interpretations to the Car Service Rules which have been developed during the past year, most of which have been approved by the General Committee of the Division and have already gone into effect. It has also developed a procedure by which to meet the request of the American Petroleum Institute that owners of tank cars which have been diverted to receive transfer loads, where transfer is required because of bad-order cars, be promptly notified of such diversion.

The committee has also given attention to the development of means of stimulating the efforts of the railroads to short route cars, the service or home route of which is contrary to the direction of home, and has recommended principles to govern in this effort which have been approved by the General Committee and issued in a circular by the Division.

#### Reclaim Rights Under Per Diem Rule 14

The Committee on Records, of which J. D. Altimes, assistant general superintendent car service, Canadian Pacific, is chairman, recommended a revision of Per Diem Rule 14 clarifying the intent of the rule as to a road's right to reclaim when cars are held by reason of a railroad error and to take care of situations arising from improper, or improperly applied embargoes, which has been approved by the General Committee and, if approved by the Transportation Division, will be submitted to the membership for letter ballot.

In order to insure greater uniformity in the methods of computing mileage allowances on cars of private ownership, the Committee on Records has developed a series of questions and answers dealing with the various points which are frequently misinterpreted. These interpretive questions and answers have been approved by the General Committee and issued in circular form.

The committee has also developed instructions pertaining to the movement of tank cars of private ownership because of differences of opinion concerning responsibility for excess empty mileage made by tank cars of private ownership, which have been issued in circular form by the General Committee.

The report contained a record of the assignment of reporting marks for cars of both railroad and private ownership as brought up to date by the committee.

The Committee on Freight Handling Service, the chairman of which is F. W. B. Humes, superintendent

stations and transfers; Eastern Region, Pennsylvania, reported that, continuing its study of the handling of fresh fruits and vegetables in relation to the formulated regulations which were discussed and approved at the 1929 annual session of the Division, it has made further studies during the year in the southeastern producing territory where conferences had been held with various interested parties. These further studies, the committee reports, strongly emphasize the importance of a general compliance with the recommendations made last year. The committee reports that noticeable progress has been made and that the question will continue to receive the committee's attention.

#### Reducing Damage to New Furniture

This committee has been giving attention to the development of steps which could be recommended to reduce damage to shipments of new furniture through the use of better containers and better packing, handling and stowing methods. For the purpose of correcting one of the numerous difficulties experienced in connection with proper handling and stowing it recommends the issuance of the following circular to member roads:

The Committee on Freight Handling Service, Transportation Division American Railway Association, has given careful consideration and study to the causes of loss and damage to shipments such as furniture, stoves, glassware and other fragile articles, and it has developed that a considerable part of damage to such shipments can be eliminated if the packages are so marked as to permit their being trucked and stowed in the freight car with the proper side or end of the article upright.

Many shippers of these articles are now, in addition to stenciling the containers "This End Up," using a *red arrow* pointing to the words "This End Up," and this has resulted in a more satisfactory handling of the shipments.

The use of the *red arrow* pointing to the words "This End Up" should be stenciled on all four sides at the top of each container. This immediately results in the prevention of considerable breakage and damage to shipments of a fragile nature, by proper loading.

The Committee urgently recommends that all members cooperate in securing the use of the *red arrow* pointing to the words "This End Up" in order to reduce breakage and damage to shipments of furniture, stoves, glassware and other fragile articles, that require a specific method of handling and loading.

The Committee on Railroad Business Mail reported that all matters which have come before it have been disposed of in the regular manner.

\* \* \*



Looking North Over the South End of the West Shore Yards, Weehawken, N. J.



# The Southern Pacific in 1929

*Revenues largest in history, but low rate of return  
on investment restricts net income—  
Earnings \$12.99 per share*

THE Southern Pacific Lines in 1929, with earnings equivalent to but 4.02 per cent on the property investment, had the largest gross revenues in their history—\$310,969,138—an increase of 3.62 per cent over the preceding year. The net income of the transportation and other affiliated companies totaled \$48,360,783, equivalent to 12.99 per cent on the average amount of stock outstanding during the year, an improvement of 21.28 per cent over the year 1928. The increase over 1928 in operating income was 8.84 per cent and in non-operating income, 34.22 per cent (this latter largely accounted for by an increase of \$3,968,202, or 69.26 per cent, in dividend income).

The operating performance of the Southern Pacific Lines is shown in Table I which gives selected freight service operating statistics for the Pacific Lines and the Texas & New Orleans for 1929 compared with the preceding year. It will be noted that the Pacific Lines had an increase of 3.8 per cent in net ton-miles with an increase of but 1.6 per cent in train and locomotive mileage. Ton-miles per car-day and train speed increased; gross and net ton-miles per train-hour were more than 5 per cent greater than in 1928.

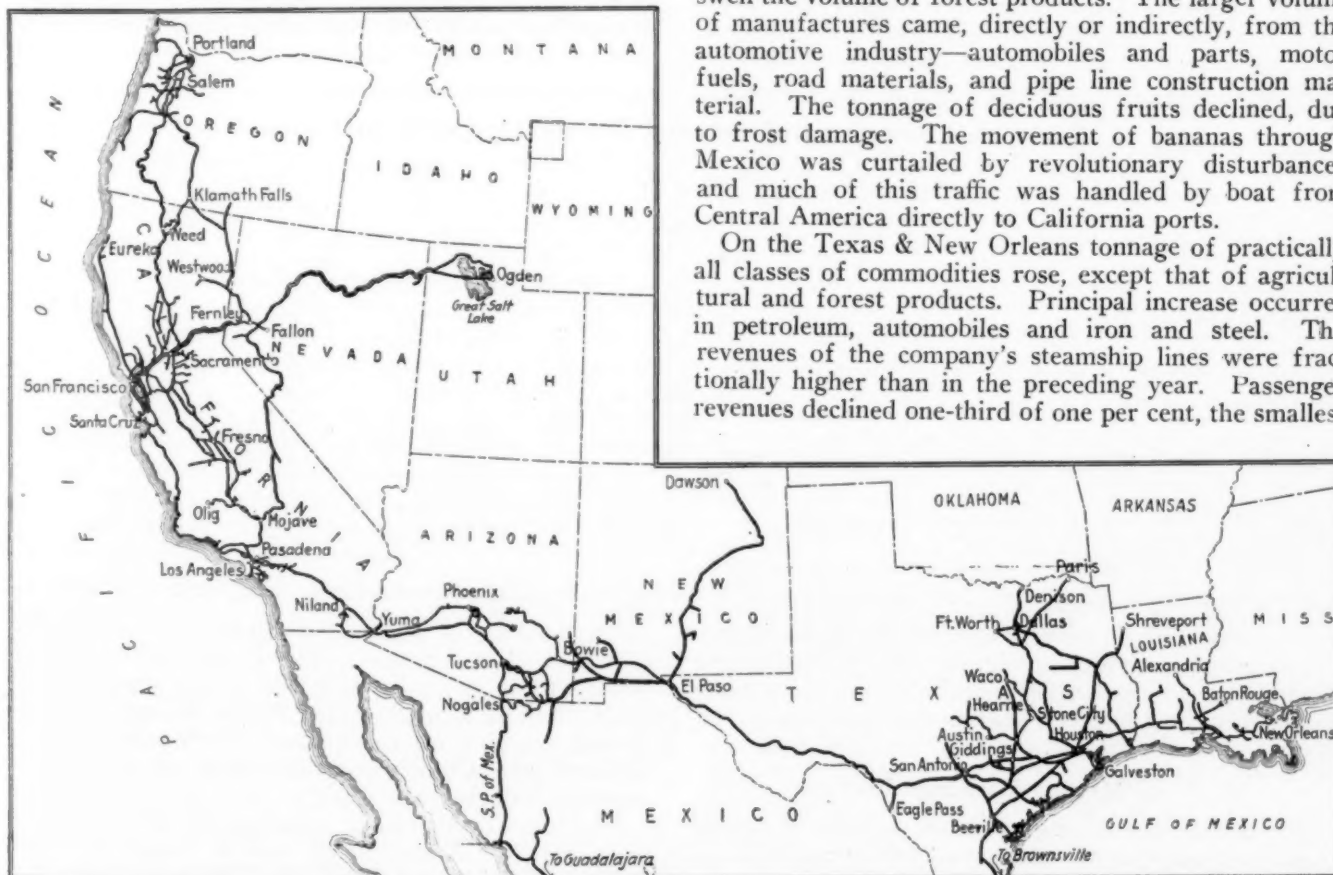
The Texas & New Orleans had an increase of 7.4 per cent in net ton-miles, accompanied by a rise of only

4.7 per cent in train and engine mileage and 4.8 per cent in train-hours. Car-miles per car-day rose 11.5 per cent, freight cars per train 7 per cent and gross ton-miles per train-hour a like percentage. The percentage of cars unserviceable was reduced more than 20 per cent and of locomotives unserviceable 18.1 per cent.

## Minerals and Automobiles Aid Traffic Increase

Railway operating revenues, \$310,969,138, were the highest in the history of the company, but they nevertheless produced, as mentioned above, net railway operating income equivalent to only 4.02 per cent on the capital investment. This, however, was higher than the rate of return for any year since 1923. The increase was due largely to a greater volume of freight traffic, but partly also to back mail pay. The increases in freight revenues of the Pacific lines and the lines in Texas and Louisiana were of comparable size. On the Pacific lines the increase was due to heavier tonnage of minerals, forest products and manufactures, partly offset by a decline in the tonnage of agricultural products. The increase in mineral traffic resulted largely from greater movement of copper ore to Arizona smelters, while timbers transported to mines helped swell the volume of forest products. The larger volume of manufactures came, directly or indirectly, from the automotive industry—automobiles and parts, motor fuels, road materials, and pipe line construction material. The tonnage of deciduous fruits declined, due to frost damage. The movement of bananas through Mexico was curtailed by revolutionary disturbances and much of this traffic was handled by boat from Central America directly to California ports.

On the Texas & New Orleans tonnage of practically all classes of commodities rose, except that of agricultural and forest products. Principal increase occurred in petroleum, automobiles and iron and steel. The revenues of the company's steamship lines were fractionally higher than in the preceding year. Passenger revenues declined one-third of one per cent, the smallest



The Southern Pacific Lines

decrease since 1923. Local business continued to fall off, but this was all but completely offset by an increase in through business.

### A Vigorous Highway Transport Policy

The Southern Pacific has a vigorous policy as regards motor transport. At the beginning of 1929 it amalgamated its subsidiary, the Southern Pacific Motor Transport Company, with the large independent lines on the Pacific Coast—the Pickwick Corporation and the Greyhound Corporation—the Southern Pacific

The company in 1929 acquired entire ownership of the Northwestern Pacific and of the Nevada-California-Oregon. A merger of the ferry operations of the S. P., the N. W. P., and the Golden Gate Ferries under a new company, the San Francisco Golden Gate Ferries, Ltd., was likewise effected, the S. P. holding a majority of the stock of the new company. These consolidations resulted in considerable operating economies. The new line from Klamath Falls, Ore., to Alturas, Cal., on the Nevada-California-Oregon was opened during the year, giving an outlet from Oregon to the Nevada

Table I—Southern Pacific Lines, Operating Results, Selected Items, 1916 to 1929

Year	Average mileage operated	Revenue ton miles Thousands	Revenue passenger miles Thousands	Rev. per ton mile, cents	Total operating revenues	Total operating expenses	Net operating revenues	Operating ratio	Net railway operating income	Net after charges	Net increase in investment in road and equipment
1916....	11,101	10,779,071	1,643,270	0.959	163,427,423	103,088,737	60,338,687	63.08	47,000,000	35,422,514	.....
1917....	11,137	13,419,091	2,024,391	0.923	193,971,490	120,601,823	73,369,667	62.18	62,000,000	49,129,417	30,197,564
1918....	11,102	12,765,384	2,217,532	1.113	221,611,206	162,722,372	58,888,834	73.43	51,000,000	28,684,916	14,713,564
1919....	11,043	11,933,299	2,379,026	1.286	239,657,272	188,385,172	51,272,100	78.61	39,677,068	31,548,607	10,726,144
1920....	11,151	12,951,778	2,407,460	1.364	282,269,504	242,113,790	40,155,714	85.77	21,312,344	32,070,275	15,661,012
1921....	11,188	10,079,305	1,823,478	1.704	269,494,365	212,572,263	56,922,103	78.88	35,946,791	30,618,778	32,800,834
1922....	11,224	10,837,265	1,812,335	1.563	262,519,170	193,664,456	68,854,713	73.77	46,222,846	32,600,150	8,984,749
1923....	11,232	13,000,879	1,946,416	1.437	287,204,635	207,166,588	80,038,047	72.13	54,228,023	44,552,482	51,471,243
1924....	11,476	13,142,848	1,841,391	1.397	275,904,111	203,051,329	72,852,782	73.59	48,101,416	35,754,416	141,868,180
1925....	12,950	14,581,435	1,858,622	1.382	293,074,553	215,609,318	77,465,235	73.57	50,313,759	37,916,317	83,033,192
1926....	13,280	14,724,693	1,837,935	1.401	298,800,998	215,595,480	83,205,518	72.15	55,796,718	42,034,665	58,788,356
1927....	13,504	15,133,358	1,805,706	1.368	297,745,406	218,179,192	79,566,213	73.28	51,604,068	35,999,196	32,242,901
1928....	13,599	15,695,443	1,737,915	1.358	300,104,027	216,734,202	83,369,824	72.22	54,968,101	39,028,634	25,446,588
1929....	13,687	16,485,032	1,766,501	1.348	310,969,138	219,698,403	91,270,735	70.65	59,741,860	47,434,930	26,064,910

Standard return for operation during federal control, \$48,167,343.

having a one-third interest in the new company, Pacific Transportation Securities, Inc., the name later being changed to the Pacific Greyhound Corporation. At the end of the year the company was operating 657 motor coaches over 8,863 route miles. Its gross revenues were \$9,386,893, operating expenses, \$6,960,407 and net after depreciation and taxes, \$956,354. In December, 1929, the company acquired a one-third interest in the Southland Greyhound Lines, Inc., operating motor coach lines in Texas and Louisiana. The railroad expects an increase in its traffic from a co-ordination of the high-

main line of the company more than 200 miles shorter than the former route and with much less grade and curvature.

Aside from construction of new lines the company in 1929 carried out several other important additions and betterment projects. Additional automatic block signals were installed so that at the end of the year only 5 per cent of primary main lines lacked this protection and this remainder, it is believed, will be signaled during the current year. A signal dispatching system was installed between Stockton, Cal., and Brighton, 40

Table II—Comparison of Selected Freight Operating Statistics

	Pacific Lines				Texas & New Orleans			
	1929	1928	Per cent of change Inc. Dec.		1929	1928	Per cent of change Inc. Dec.	
Mileage operated .....	8,800	8,742	0.7		4,709	4,677	.07	
Gross ton-miles (thousands) .....	37,989,651	36,726,280	3.4		13,081,908	11,642,223	12.4	
Net ton-miles (thousands) .....	13,870,135	13,365,454	3.8		4,994,019	4,649,771	7.4	
Freight train-miles (thousands) .....	19,744	19,441	1.6		9,670	9,233	4.7	
Freight locomotive-miles (thousands) .....	24,401	24,029	1.6		9,738	9,297	4.7	
Freight car-miles (thousands) .....	976,043	955,129	2.2		344,569	306,970	12.2	
Freight train-hours .....	1,492,830	1,521,041	1.9		665,467	634,811	4.8	
Car-miles per day .....	39.3	39.2	0.3		34.9	31.3	11.5	
Net tons per loaded car .....	22.5	22.2	1.4		23.1	23.1	...	
Per cent loaded to total car-miles .....	63.3	63.1	0.3		62.7	65.5	4.3	
Net ton-miles per car-day .....	558	548	2.0		505	474	6.6	
Freight cars per train .....	50.4	50.1	0.6		36.6	34.2	7.0	
Gross tons per train .....	1,924	1,889	1.9		1,353	1,261	7.3	
Net tons per train .....	702	687	2.2		516	504	2.4	
Train speed, miles per train-hour .....	13.2	12.8	3.1		14.5	14.5	...	
Gross ton-miles per train-hour .....	25,448	24,145	5.4		19,658	18,340	7.2	
Net ton-miles per train-hour .....	9,291	8,787	5.7		7,505	7,325	2.5	
Pounds coal per 1,000 gross ton-miles .....	119	120	0.8		97	103	5.8	
Locomotive-miles per locomotive-day .....	73.4	70.6	4.0		79.3	75.6	4.9	
Per cent freight locomotives unserviceable .....	21.6	21.7	0.5		16.3	19.9	18.1	
Per cent freight cars unserviceable .....	5.8	5.9	1.7		4.3	5.4	20.4	

way service with its railway operations. In addition to the extensive activities in highway transportation outlined above, the Pacific Electric also has extensive motor coach operations and has inaugurated a store-door delivery service for freight.

### S. P. of Mexico Earnings Increase

The Southern Pacific of Mexico, in spite of revolutionary activity which interrupted traffic and resulted in considerable damage to the line, had an increase in both gross and net earnings. Operating revenues totaled \$7,009,805 and net after rents and taxes was \$1,004,606.

Work was begun on a modern engine terminal at Taylor (Los Angeles), Cal. A new yard was built outside the City of Fresno, with a new line to avoid the passage of through freight traffic through that city. Second tracking on the Central Pacific line between Oakland and Ogden was continued, 28 miles being completed during the year.

The company also made important additions to equipment in 1929. A total of 65 modern locomotives were ordered, 41 of them being 4-8-8-2 Mallets. Car orders included 737 for freight and work train service and 28 for passenger service. Of the latter 10 were lounge



cars equipped with refrigerating devices as assure comfortable travel regardless of hot weather.

### Marked Reduction in Transportation Expenses

Ratios showing the trend of operating performance in 1929, compared with that of 1928 follow:

	1929	1928
Maintenance of Way Expenses (% of Op. Rev.).....	12.63	12.91
Maintenance of Equipment Expenses (% of Op. Rev.)...	17.45	17.22
Transportation Expenses (% of Op. Rev.).....	33.08	34.71
Operating Ratio (% of Op. Rev.).....	70.65	72.22

The reduction in the transportation ratio is particularly noteworthy, since it resulted from an actual decrease in transportation expenses in the face of an increase in traffic.

The Southern Pacific's gross income in 1929—\$77,613,675—was 2.57 times fixed charges. The corporate surplus, \$511,803,998, was 1.37 times the total of capital stock in the hands of the public. The principal financing during the year was the issue of \$65,166,000 of 4½ per cent 40-year bonds of 1929 and of \$6,825,000 of equipment trust certificates. The bond issue provided funds to meet a maturity of \$53,815,760 of 4 per cent bonds with a surplus for other capital expenditures. The bonds were offered to stockholders of the company and carry purchase warrants for three shares of common stock at \$145 for each \$1,000 bond, or at a lower price if stock should be offered below \$145. The net increase in funded debt held by the public as a result of these transactions was \$7,514,592.

Joseph H. Dyer, vice-president in charge of operation, was quoted in a dispatch to the Wall Street Journal as predicting net earnings for the current year which, while they would fall below 1929, should equal those of 1928. Mr. Dyer stated that the movement of perishables from California is heavier than in 1929. He said further that there was an excellent prospect for a "bumper" crop in California and that a revival in business could be expected during the latter half of the year.

## C. & E. I. Prepares Lease Instructions

FOR many years it was the practice of many railways to give little attention to the manner in which they leased their property for industry use, a nominal rental being charged merely for the purpose of rendering the contract legal and binding, and to protect the road's title to the land. In these leases, no consideration was accorded the valuation of the land, as determined by its location, area and adjoining facilities. In recent years, however, this practice is giving way to a policy which fixes lease rates according to a definite plan, the basis of which is the physical valuation of the property. Some of these roads have prepared and issued instructions outlining the methods which are to be followed in arriving at equitable lease rates.

One of the railways which has given special attention to this subject and which has prepared a more than usually complete set of instructions is the Chicago & Eastern Illinois. Its practice is set forth in the following rules for the guidance of employees.

### General Instructions

1. Company property should not be leased in such detached pieces that the remainder of the property is less valuable than it was before the first piece was leased, and applicants should not be permitted to pick out choice parts of a piece of prop-

erty with the result that the remaining property will be less desirable than before.

2. Applicants should not be permitted to lease company property and erect structures thereon in such a manner that it becomes necessary for them to utilize additional railroad property to maintain communication between the pieces of property leased.

3. Any use of railroad property must be paid for in line with the provisions in this circular.

### Valuation of Facilities

4. Railroad property is to be leased on the basis of a correct and fair valuation. In arriving at this value, account should be taken, among other things, of the following:

Land (a) The going value of similar land held or used for similar purposes and lying adjacent to or adjoining the land of the railroad. If the private property is available for side track installation, the owner will have taken that into account, and similar railroad property will have the same value. If the private property is not available for side track installation, the railroad property which is so available will have just that much more value, perhaps to the extent of 20 per cent to represent the increased commercial value as a site for an industry. Where a lessee uses a driveway along the railroad right of way in common with other lessees or shippers, this should be given consideration in determining the value of land.

(b) Land should be valued in round figures and not in odd dollars and odd cents if it seems equitable to do so.

Tracks (c) If the railroad property to be leased to a new occupant is already served by a side track exclusively for the benefit of this property, the value of said side track will be estimated at \$5 per lineal foot, measured from the point of clearance. This amount should be capitalized and interest charged on the basis of eight per cent. If the individual track serves two or more pieces of leased property, the value of said track is to be divided on a fair basis and the new occupant charged accordingly.

(d) Whenever an elevator, coal yard, manufacturing plant or other industry is located on a track already in use by the railroad as a station or team track and said railroad track, in lieu of an industrial track or private siding, is used by said industry or industries, rule 4(a) will be applied as to the revaluation of the property and a proportionate amount will be added for the use of said track; that is to say, it will be assumed that each of the said industries is using 100 ft. of side track, having a value of \$250. This rental value, at eight per cent, amounts to \$20 and in these cases this amount will be added to the annual rental for the use of the track. This should not be shown on the blue print as an assignment of trackage, the \$20 simply being added to the land valuation rental.

(e) If the new lease is a renewal to the same party, who wishes to continue operations in the old location, the charges provided in 4c and 4d will not be made for the existing side track, except that the usual arrangement as to maintenance will prevail and the land should be revalued to the basis outlined above.

(f) Leases do not permit the lessee to transfer the lease to another party without consent. Therefore, if consent is given to such transfer prior to the expiration of the lease, the original terms of the lease will be continued with the new party until the expiration of the lease. If this new lessee desires a new lease on the property, it should be revalued in accordance with rule 4 (a) and the value of the side-track connection as previously outlined should be added, but, if said side track is used by other parties, only the pro rata proportion of the value of the track (at \$5 per lineal foot) should be charged under the new lease or renewal.

(g) In leasing a new piece of land not served by a side track but for which a side track is to be constructed, the usual basis as to said side track will be applied; namely, the applicant is to advance the entire cost and will secure refund in the usual way to cover the cost of the metal, and in this instance there will be no additional valuation placed upon the side track for rental purposes.

### Regular Charges

5. Value. Eight per cent is to be charged on the value as above ascertained. The railroad shall pay the normal taxes but the rental shall be subject to the minimum charges named below.

6. Taxes and assessments to be covered by the present clause as follows: "The lessee further agrees to pay all taxes, assessments and license fees or other charges that may be levied or assessed upon said improvements or against the lessor by reason of the use of said premises by the lessee."

7. Any special taxes and assessments resulting from public improvements such as street paving, sewers, water lines, etc.,

shall be added to the value of the property and considered one of the elements in establishing the total value, and rental on the basis of eight per cent per annum shall be assessed thereon. The lease forms will provide for an automatic increase in the rental when assessments are made against the property, except when the lease places upon the tenant the burden of assuming such assessments. In making bills for increased rentals resulting from this increased cost and as a result of the assessment, the increase in rental should be put in the next year's bill covering the entire amount at that time. As the present leases are renewed they will be adjusted accordingly and new leases will be prepared on this basis.

### Minimum Charges

8. As there is a substantial expense connected with all these transactions, it is necessary to set up minimum charges per annum for property leased or a license charge for property leased without rental. Whenever rental on the basis of eight per cent does not equal or exceed the minimum named below, such minimum shall be applied and, where the minimum is applied, the railroad will assume the ordinary and normal taxes but will not assume the special taxes or assessments.

(a) Farms, gardens and lawns. Railroad right of way property may be leased to employees for gardens or lawns on the basis of \$1 per year rental, but railroad property outside the right of way shall be leased to employees for gardens or any other purpose, on the basis of a fair value for such purposes; namely, on the basis of farm values and customary rentals in the immediate vicinity. In doing this it may not always be possible to conform to the eight per cent requirement.

(b) Railroad property leased to other than employees for gardens or lawns which beautify the railroad property or which reduce the cost of maintenance to the railroad shall be charged for on a suitable basis. For instance, around depot property the rental may be as low as \$1 per year and in other cases for a greater amount as the value of the improvements becomes less important or of less interest to the railroad. This is not intended to cover farm property leased to the general public.

(c) Railroad property leased to other than employees for farm use should be charged for at the going rate on farm property in the same vicinity. Apparently this basis is usually a matter of agreement and is not based exactly upon the value of the land.

(d) Underpaths for use of stock. Inasmuch as parties having farm lands on both sides of a railroad right of way have the right under the law to demand a farm crossing with gates in each fence and as it is to the advantage of the railroad to have an underground passageway properly fenced on both sides, rather than a grade crossing, such privilege may be granted for a minor consideration of \$1 per year or may even be granted free of charge when conditions warrant. Where such underground crossings been put in under contract with the owner, as a part of the consideration for right of way, such contract should not be changed except by mutual consent. This rule applies for the future, as the contracts now in existence will not be disturbed.

(e) Sidewalks. Railroad property leased for sidewalks which are advantageous to the railroad and the arrangement of which relieves the railroad of maintenance and other expenses may be leased for \$1 per year.

(f) Land for sidewalks otherwise situated shall be leased on the regular basis, with a minimum of \$10 per annum.

(g) Drainage and tile drains. As the value of proper drainage is as important to the railroad as to a private party or to a community, a charge will not be assessed for drains or ditches ordered by highway commissions or other public bodies, and if located on the right of way within the limits of a street or other public way no charge will be made, whether they are placed by a public authority or by a private party. Where the drain or ditch is located on the right of way for the benefit of a private party and not within the limits of a highway or street, a license fee of \$10 for the privilege will be assessed.

(h) In view of the benefits that will accrue to the railroad from underground tile drains crossing railroad property or along the railroad right of way, no charge will be made for the use of the property, provided the applicant conforms to the railroad standards for such tile drains and provides a proper outlet at the proper level to prevent flooding other property.

(i) Where water pipe lines are located within the limits of highways or streets crossed by the railroad right of way and have been installed by public bodies or by any private party obtaining the authority of the city, no charge will be made for the use of the right of way but the railroad will not assume any expense in connection with the installation. As to all other use of the right of way for pipe lines, a \$15 minimum rental will be assessed when the pipe lines do not pass under

the track and a \$25 minimum rental when the pipe lines pass under the railroad track or tracks (See paragraph (k) below).

(j) Sewer, gas and oil pipes. Same as water pipes.

(k) In computing the rental of eight per cent of the value of the land in the case of underground installations, other than drainage ditches and tile drains, the value should be fixed on the actual width and length of land used in making the installation, with a minimum width of 5 ft. and a minimum length of 100 ft., and when the annual charge so computed is less than the minimum charge, the minimum charge will apply.

(l) No charge will be made for the use of right of way for conductors, poles, guys or anchors within the limits of a street or a highway, by any public utility or any private party obtaining the authority of the community, but outside of these limits the following rental charges will be made:

Wire crossing under railroad tracks; \$10 for the first year and \$5 per annum thereafter.

Wire crossing over railroad tracks; \$15 for the first year and \$10 per annum thereafter.

When guy wires cross over tracks; \$15 per group for the first year and \$5 per group for each year thereafter.

When guy wires do not cross over tracks; \$10 per group for the first year and \$5 per group for each year thereafter. "Group" shall include all the anchors and guy wires attached to any pole.

When a pole line occupies railroad property longitudinally; \$10 per annum for distances up to and including  $\frac{1}{4}$  mile; \$15 for over  $\frac{1}{4}$  mile up to and including  $\frac{1}{2}$  mile; \$20 for over  $\frac{1}{2}$  mile up to and including 1 mile; over 1 mile to be pro rata in addition.

All other pole encroachments; \$1 per year for each pole on railroad property or with fixtures overhanging railroad property. The minimum rental for any one contract shall be \$2 per year and, in any case where the yearly rental is less than \$10, the contract shall provide that the rental be paid in advance for a five year period.

(n) Licenses for oil unloading devices; \$10 for a five year period. Where any property is leased in addition to the unloading device for use of the applicant, the regular rental rates will apply, with a minimum of \$25 in addition to the above license fee.

(o) Land for unloading platforms which do not relieve the railroad of any expense shall be leased on the regular basis with a \$10 minimum.

(p) Limestone bins constructed by or handled for the account of the community or by private parties are to be put on the same basis and charged for at the regular rate with a minimum of \$10 per annum.

(q) Space for wagon scales to be installed by the applicant is to be charged for on the basis of a minimum of \$10 per location per annum, if eight per cent of the value of said property does not exceed this amount.

(r) Overhead conveyors of all kinds, \$25 minimum rental.

(s) For all other uses of railroad property, \$25 minimum to be charged per annum if eight per cent of the value of said property does not exceed this amount.

### Application of Minimum Charges

(t) Where the term license fee is used in this circular it means an initial payment but not an annual one. Where the term rental is used it means an annual payment.

(u) Where a lease carries two or more structures for which a separate minimum rental is provided in these instructions, the highest minimum should apply. For example, if the lease contains a structure which provides for a \$10 minimum and also a structure which provides for a \$25 minimum, the larger figure is the minimum that should be used for such a lease. If the lease, however, contains two items where the minimum is the same, like a wagon scale and a lime bin where the minimum charge is \$10 each, a minimum of \$10 should be used in such a lease. This paragraph does not apply to the minimum charges set out in paragraphs 8(1) and 8(n).

FOUR NEW RAILWAYS, each backed by a different section of the country, are under consideration in Rhodesia, according to Department of Commerce reports. One is a connection with the west coast at Walvis Bay; another is the Sinoia-Kafue cut-off, and a third is a short line to connect the Rhodesian system at Wedza with a branch of the South African railways at Messina on the Limpopo river, a project which rivals the proposed West Nicholson-Messina link. The proponents of this third line stress the fact that it would pass through a rich mineral territory and the advantage of a direct connection with Lourenco Marques, a Portuguese port on the east coast.



# Convention Discusses Air-Brake Operation and Maintenance

*Over 600 members and guests of the Air Brake Association attend four-day meeting at Chicago*

**W** W. White, supervisor of Air brakes, Michigan Central and president of the Air Brake Association, which held its thirty-seventh annual convention in the Hotel Stevens, Chicago, May 13 to 16, inclusive, struck the keynote of the convention in his presidential address when he stressed the need for further effort toward improving the operation and maintenance of air brakes on both freight and passenger equipment. He spoke of the possibilities of improved operation if all dirt and foreign matter could be excluded from the brake system. Although there were a number of protective devices now available for such devices as brake cylinders, still it was apparent that a more effective protective device should be perfected for the triple valve. He suggested that many roads could accomplish much through the use of triple-valve condemning gages.

Many air-brake departments, he said, had been affected by the program of economy which various railroads had been required to adopt. In this program, the air-brake supervisor could play an important part. Over 22 millions of dollars, he said, were spent for air brake equipment and materials during 1928.

Mr. White closed his remarks by emphasizing the value of the printed proceedings of the association to the air brake man. The value of these proceedings, he said, is considerably enhanced by having complete discussions on each paper and committee report.

T. L. Burton, air brake engineer, New York Central Lines, and secretary of the association, announced that the executive committee had decided to hold the convention in Toronto, Ont., in 1931, if the necessary hotel accommodations could be arranged.

S. O. Dunn, editor, *Railway Age*, made the opening address of the convention. Following his address, the convention considered the following papers and reports of committees: The Care of the U C and Triple Valves While Out of Service, contributed by the Southeastern Air Brake Club; A. R. A. Committee on Brake and Brake Equipment and Its Relation to the Air Brake Association, by G. H. Wood, supervisor of air brakes, Atchison, Topeka & Santa Fe; Operation of the Air-Pressure Water System on Sleeping and Passenger Cars, contributed by the Central Air Brake Club; Committee Report on Recommended Practice; Brake Equipment on Gas Rail Cars, contributed by the Pittsburgh Air Brake Club; Passenger-Train Handling Instructions, by J. A. Burke, assistant air brake supervisor, Atchison, Topeka & Santa Fe; Triple Valve Repairs—Maintaining Standards, contributed by the Northwest Air Brake Club; Training and Supervision of Employees Having To Do With Maintenance of Brake Equipment, a committee report; Brake System Leakage, a committee report; U-12-BC Universal Valve, contributed by the Manhattan Air Brake Club; and a typical discussion on Exclusion of Dirt and Moisture from Passenger Brake Cylinders.

Over 600 members and guests registered at this convention. A complete program of entertainment was arranged for the ladies during the day and the members and guests in the evenings by the Air Brake Appliance Association. This program was featured by an old time minstrel show which was sponsored by the Supervisor's Association of the Corwith, Ill., Reclamation Plant of the Atchison, Topeka & Santa Fe, on Tuesday evening. The grand ball was held the following evening.

Following are summary reports of Mr. Dunn's address and several of the papers and reports which were presented during the convention.

## Operating Economies Versus Increased Taxes

Mr. Dunn introduced his remarks by stating that we were now in the midst of the greatest revolution in transportation that has occurred since the beginning of steam-railroad transportation in this country. He briefly reviewed the developments in steam railroad competition, emphasizing that of subsidized waterways, and that although the railroads contributed as taxpayers to the support of such competition, nevertheless they were not permitted to participate in any of its advantages. He concluded his address by pointing out the improved attitude of the public toward the railroads, and stating that although the situation might appear rather pessimistic at the present time, still there was every reason to expect an improvement in the future from the standpoint of the railroad industry as a whole.

## Relation of the A. R. A. to the Air Brake Association

G. H. Wood, supervisor of air brakes, A. T. & S. F., briefly reviewed the relationship of the work of the Air Brake Association to that of the A. R. A. Committee on Brakes and Brake Equipment. A number of years ago the Master Car Builder's Association invited the Air Brake Association, now a part of the Mechanical Division, A. R. A., to appoint a special committee to meet with it and participate in the discussion of air brake subjects. This relationship has continued and developed to its present form.

Through the Air Brake Association, he said, many practices and methods have been developed which are of mutual advantage to all the railroads. Many such methods and practices, once thoroughly established, have been incorporated in the standard and recommended practices of the A. R. A. Various proposals, he stated, reach the A. R. A. committee through the regular channels, and the fact that many of the committee members are also members of the Air Brake Association, enables them to be fully conversant with the subjects presented and the facts relating thereto. The Committee on Brakes and Brake Equipment, he emphasized, has essentially legislative functions. Its

action, when approved by ballot, becomes a law of the A. R. A. in the interchange of equipment. It is, therefore, its duty to consider carefully and to investigate thoroughly all subjects presented so that one railroad will not benefit at the expense of hardship of another and so that the greatest good will accrue to the greatest number.

#### Passenger-Train Handling

J. A. Burke, assistant air brake supervisor, A. T. & S. F., reviewed the various methods in vogue on various railroads for starting and stopping passenger trains. In starting a train, he said, the engineman is often confronted with conditions wherein the locomotive cannot start the train without taking slack. In such cases he advised taking the slack on one car and, if this is not sufficient, then take the slack on the entire train. If steam has been used just prior to or in taking slack, he suggested that the independent or straight air should be applied before the engine is reversed. After the slack has been pushed back in a train, he said, the subsequent forward movement must be made gently if rough handling is to be completely avoided.

In discussing stopping trains, Mr. Burke said that with trains of eight cars or more the brake application should be made in reductions of from 6 to 8 lb., allowing sufficient time between reductions for the slack to move either in or out. At lower speeds, he said, the reductions should be made even lighter than those just specified. Experience has shown, he pointed out, that when a heavy brake application is made in one continuous reduction of brake pipe pressure, bad surges are felt in the train.

#### Discussion

The discussion of Mr. Burke's paper centered largely around the use of the independent brake valve in making passenger-train stops. Several roads forbid their enginemen to use the independent valve in handling passenger trains, while other roads apparently left the problem to the judgment of the engineman. After all, one speaker pointed out, it is results rather than procedure that are most desired. If one engineman can make a smooth stop by using the automatic valve alone while another feels he must use the independent valve to achieve the same results, why require either to conform to a definite rule when both men secure the desired result but by different methods?

The question of the time consumed in making a stop was also discussed at considerable length. One speaker pointed out that it was comparatively easy for an engineman to "sneak up" on a water spout after slowing his train down to a few miles an hour with the automatic brake and then spot his train with the independent brake. It was a different problem, he said, to make a stop from high speeds in 30 or 45 sec. These remarks were made after several speakers had endeavored to make comparisons in passenger-train handling between different railroads.

#### Training and Supervision of Air-Brake Employees

A committee consisting of J. A. Burke, assistant air brake supervisor, Atchison, Topeka & Santa Fe; E. Von Bergen, general air brake, lubrication and car-heating engineer, Illinois Central, and F. C. O'Neill, supervisor of air brakes, Cleveland, Cincinnati, Chicago & St. Louis, presented a report on the training and supervision of air-brake employees. It was pointed out in the report that the greatest need at the present time is for a separate craft of air brake mechanics. Boys who start in as apprentices should be selected for this

craft and serve at least two years of their time in air-brake work.

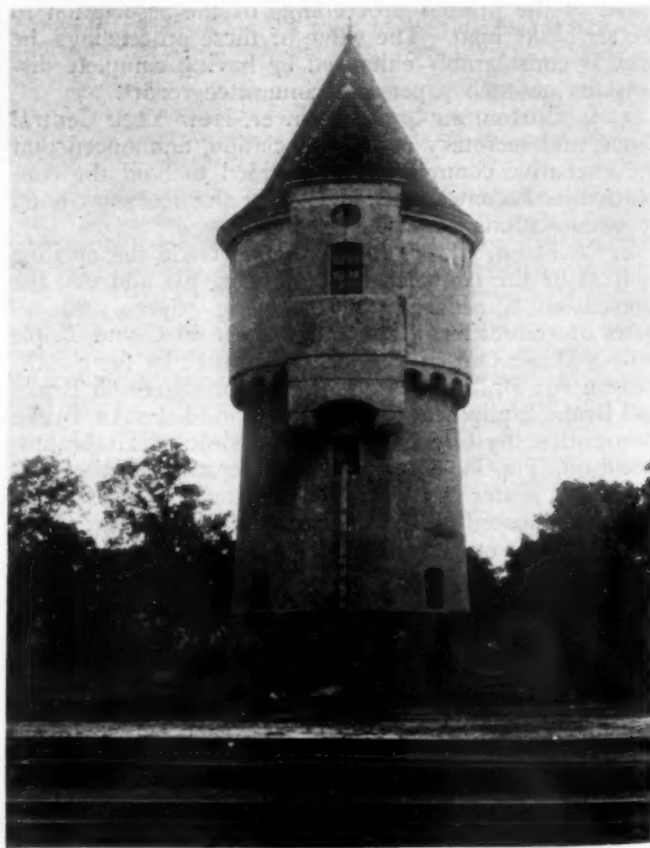
The report dwelt largely on the qualifications of an air-brake supervisor. It stated that supervisors should be selected for their ability and be energetic, active men. They should be expert at all classes of air-brake repair work and be able to demonstrate the best methods of securing both quantity and quality production. The air-brake supervisor should have authority over the maintenance and operation of the air brake equipment in his territory, especially as to the qualifications of employees assigned to this territory.

#### Moving Pictures of Siskiyou Brake

##### Tests Shown at Convention

C. E. Chambers, superintendent of motive power and equipment, Central Railroad of New Jersey, and chairman of the Safety Appliances Committee of the American Railway Association, spoke at the Wednesday morning session of the convention. He took advantage of the occasion to congratulate the association on the excellence of its work and emphasized its importance in the development of rail transportation. He closed his remarks by inviting the members of the association to view a showing of the moving pictures recently taken of the air-brake tests now being conducted on the Siskiyou line of the Southern Pacific. These pictures, which were shown under the direction of H. A. Johnson, director of research, American Railway Association, reviewed the progress of the tests from their beginning in the laboratory at Purdue University up to the present time. A number of views showing the testing of from 85- to 150-car trains were included in the films. Samples of the various records and charts were also shown. Road tests of the SC5 equipment will be completed in about 30 days. These tests will be followed by those of the SC3 equipment.

\* \* \*



A New Type of Water Tower on the Polish State Railways



# Many Changes in Pullman Cars Since 1858

*Chronology of improvements  
shows effort to meet public's  
evolution in taste and  
standard of living*



**The Old and The New**  
No. 9 is a Contrast to the Observation Car of the Columbine of the C. & N. W.



**T**HAT the design of cars and the conveniences of Pullman service have kept pace with the improvements in the standard of living and the corresponding changes in tastes of the public is apparent in a modern car, but the real difference between such a car and one of the first cars can only be appreciated by reviewing the improvements that have been made. A chronology of these changes, starting with 1858, shows that a modern car and its service differ widely from those of 1858 in over 124 major respects. Some of the improvements in Pullman cars and their service follow:

- 1858.—The remodeling of a Chicago & Alton coach into the first Pullman sleeping car was begun.
- 1859.—No. 9, the first Pullman sleeper, made its first trip from Bloomington, Ill., to Chicago on September 1.  
Candles furnished light.  
A wood-burning stove provided heat.
- 1865.—The Pioneer, the first sleeper constructed by modern methods of the day, was put into service.

Six wheel trucks were applied to the Pioneer. Wooden panels were used on the exterior of the car.

A hand pump maintained the water supply.

- 1867.—The first Pullman "hotel" car was built.
- 1868.—The first Pullman dining car was constructed.  
Hot-water heaters replaced the stoves.
- 1871.—Straight air brakes were applied.
- 1872.—Overhead tanks, with or without a pump, were added to the water-supply system.
- 1873.—Oil lamps replaced candles.
- 1875.—Plain automatic brakes were adopted in place of straight air brakes.  
Parlor cars were introduced into Pullman service.
- 1878.—A hot-water heating system replaced the hot-water heaters.
- 1879.—Paper-center, steel-rim wheels replaced iron wheels.
- 1886.—Electric call bells were added.
- 1887.—The narrow vestibule was invented and applied.  
Electric lights were used for the first time.  
Steam, in conjunction with hot-water circula-



The Soda Fountain is a Modern Convenience

- tion, was applied to the heating apparatus instead of hot water alone.
- 1889.—Quick-acting automatic brakes were installed in lieu of plain automatic.
- 1890.—The swinging berth curtain rod was developed. Wooden sheathing was used on the exterior of cars instead of wooden panels.
- 1891.—Pintsch gas burners replaced oil lamps after previous experiments.
- Anti-telescoping construction was developed.
- 1893.—An air-pressure water system replaced overhead tanks.
- The wide vestibule was developed.
- 1895.—The high-speed brake was developed and first applied to six-wheel trucks.
- 1899.—Axle generators and storage batteries for electric lighting supplanted the head-end system. Electric fans were installed.

#### The Use of Paper-Center Wheels Was Abandoned

- 1900.—Cast-iron hub, steel-rim wheels replaced the paper-center steel-rim wheels.
- 1900.—Roller curtains over vestibule diaphragm connections between cars were added.
- 1901.—Reading lights were placed in berths.
- 1905.—Open plumbing was installed.
- 1906.—The automatic exhaust type ventilator was applied to the deck of the car.
- The fumigation of cars became standard practice.
- 1908.—The vacuum steam-heat system supplanted the hot-water system.
- The dental lavatory was first applied.
- 1909.—The first steel sleeper was placed in service. Sliding window screens replaced folding screens. "First Aid" kits were added.
- 1910.—Improved air brakes were adopted.
- Steel sheathing was applied to the exterior of cars.
- Improved anti-telescoping construction was adopted.
- 1913.—Electric exhaust fans were added to sleeping cars and to club cars and rooms where smoking is permitted.
- Solid steel wheels were tried out in place of steel-tired wheels.
- Water and ice were separated, a tank for each being used.

- 1914.—The vacuum cleaning of cars was begun.
- 1915.—Mirrors were placed in upper berths.
- 1916.—Divided berth curtains replaced old type. The safety ladder replaced the step-ladder. Universal control brakes adopted. Steel plates were used on the exterior of cars. Rods replaced the safety cord used to support the upper berth.
- 1917.—Floor lights were installed.
- The clasp brake was adopted (two brake shoes being applied on each wheel).
- 1919.—Draft gears were improved.
- A buffer mechanism was added.
- 1919.—Window sash ventilators were added.
- Safety locking center pins were added to hold the truck to the body.
- Split front toilet seats replaced solid seats.
- 1920.—The use of heavier couplers was begun.
- 1921.—Various improvements in electric lighting generator suspensions and regulators were adopted.
- A new style truck was placed in service.

#### "Quiet" Signs Were Installed

- 1922.—Luminous berth numbers and "quiet" signs were installed.
- 1923.—Permanent headboards were added.
- A larger stepping box supplanted a smaller surfaced one.
- The upper berth shelf replaced the hammock.
- Rubber battery jars replaced lead-lined tanks.
- Passenger agents and platform men were uniformed.
- Carpet padding was applied.
- The physical examination of car employees was begun.
- 1924.—A safety-razor-blade receptacle was added.
- An anti-pinch device for toilet-room doors was installed.



Single-Room Cars were Introduced in 1926



End-door car numbers became standard.  
A dressing shelf was installed in the men's washroom.

"Watch Your Step" signs were applied to steps and vestibules.

Improved valves and fittings were added to the water system.

A new three-position headrest for sleeping-car sections was developed.

New toilet indicator locks were added.

Porcelain wash bowls were adopted.

1925.—Shoe receptacles were added for rooms and compartments.

An improved and more attractive design of seat end was adopted.

The porcelain wash bowl and stand were installed.

Women's lounge rooms with baths were added.

1925.—Water coolers arranged so they can be iced from hallways were placed in women's dressing rooms.

The four-tread step was adopted, thereby shortening the distance between the lower step and the step box.

Larger fans were provided in smoking rooms.

The general application of variable interior designs with plain colors instead of graining, new decorative schemes and improved lighting fixtures were adopted.

Observation rooms were provided with lounges and tables.

Semi-enclosed section partitions with narrow sliding headboards were installed.

The amount of insulating material in car frames was increased and improved.

The lighting of toilet rooms was improved for shaving purposes by placing bracket lamps over mirrors.

#### Single-Room Cars Were Introduced

1926.—Gas-filled lamp bulbs were installed throughout the car to improve the general illumination.

Berth curtains were changed in color scheme.

Reading-light fixtures in berths were improved by changing the bulb from 15 to 25 watts.

Adjustable reading lamps were added for the drawing-room sofa.

Lower-berth reading lamps were changed from the recess to the bracket-and-shade type.

Additional racks were provided in drawing rooms and compartments.

Single-room cars were introduced.

1927.—Brass window sash was employed.

A new truck was adopted to accommodate the various types of roller-bearing applications.

The two-part vestibule door became standard.

Car flooring was improved by a change in the materials employed.

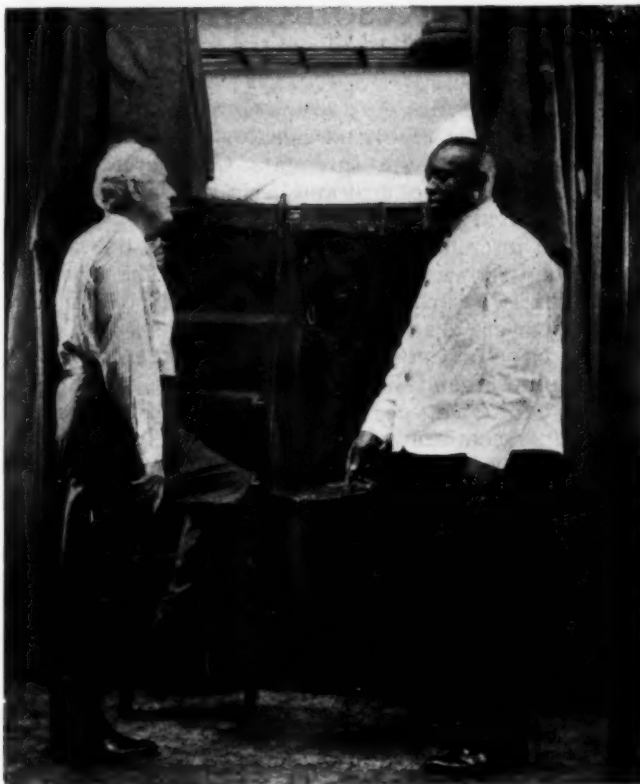
1927.—The electric generator drive was changed and new driving pulleys with belt guards were provided.

1928.—Movable revolving chairs were provided for the women's lavatory.

Two-inch metal steam connections were provided between cars in place of rubber hose.

The curtain arrangement in the women's lavatory was improved to prevent entangling when entering women's room with baggage.

The smoking-room sofa was improved.



The Safety Ladder and the Upper Berth Shelf

An automatic locking device for the train connector was applied.

The design of journal boxes was changed, the single guide being adopted.

Larger steam pipes were applied.

A wardrobe was provided for compartments.

Spring mattresses for lower berths were developed and generally applied.

1929.—Water coolers were redesigned to overcome overflow.

A new washstand faucet with an overhanging spout was adopted in place of the concealed spout.

Electric exhaust fans were added generally to improve ventilation when cars are standing.

A section seat with a slanting top and with a second stop provided on the seat slide to permit pulling the seat cushion out, to make a wider and more comfortable seat, was adopted.

The journal-box design was improved to prevent the ingress of water.

A special upper-berth spring mattress was adopted.

A non-slip shoe was provided for the upper berth ladder.

A larger rack was provided for the drawing room.

The vitrolite shelf was adopted for the smoking room in place of enameled steel.

A GAS COMPANY IN NEW YORK state must, at its own expense, remove and relocate a gas main which interferes with the changes of grades necessary in the elimination of a highway grade crossing. This is the substance of a decision by the Court of Appeals on May 6, reversing a decision of a lower court which had decided in favor of the gas company in a case which arose at Bayside, Long Island.

## Couzens Resolution Adversely Reported

AN adverse report on Senator Couzens resolution to suspend the Interstate Commerce Commission's authority to authorize railway unifications was submitted to the Senate on May 8 by the committee on interstate commerce after a poll of the committee had shown nine votes for it and nine against it. A day or two earlier, after an informal poll of members who were absent when a 6 to 6 vote was taken on May 2, Senator Couzens had a 9 to 8 vote in favor of the resolution and had prepared a favorable report, but the additional vote made it impossible for the committee to recommend that the resolution be passed. It was placed on the Senate calendar, however, and on May 7 the Republican steering committee had given it a place on its program of major measures to be taken up by the Senate before adjournment.

This action, together with the fact that the steering committee had also eliminated from its program the bill for the regulation of bus transportation, although not binding upon the Senate in cases where there are sufficient votes to the contrary, led to a vigorous protest in the Senate on May 9 led by Senator Hawes, of Missouri, who has been outspoken against the Couzens resolution. He declared that it was an extraordinary procedure to place the resolution on the program before it had reached the calendar, particularly in view of the fact that the resolution had not commanded a majority vote in the committee after having been twice redrafted. Senator Hawes said that Senators Goff and Kean, members of the steering committee, as well as Senator Watson, majority leader, had voted against the resolution in committee, but Senator Vandenburg, chairman of the steering committee, replied that they had voted to include it in the program for proposed legislation, "because they realized that it is of sufficient major challenge so that it must be acted upon before this session of the Senate adjourns, in justice to the large interest in the country which demands that the Senate meet this issue."

Senator Barkley said that if the steering committee cannot be persuaded to put the bus bill on the program it will be very difficult to obtain action on it in the short session next winter. Senator Watson explained that the committee had come to the conclusion that the measure was so highly controversial in nature that it might not be passed at this session and that therefore other things should be considered. Senator Couzens said that perhaps he should assume responsibility for displacing the bus bill because he had found some of the members of his committee so determined that there should be no certificate of public convenience and necessity that the bill could not be passed with such a provision in it and that he had advised the chairman of the steering committee to put the bill lower down on the list. "The bus people and the railroads, who were the prime movers in getting this legislation through the House," he said, "had apparently lost interest in it after it was reported out by the Senate committee with amendments."

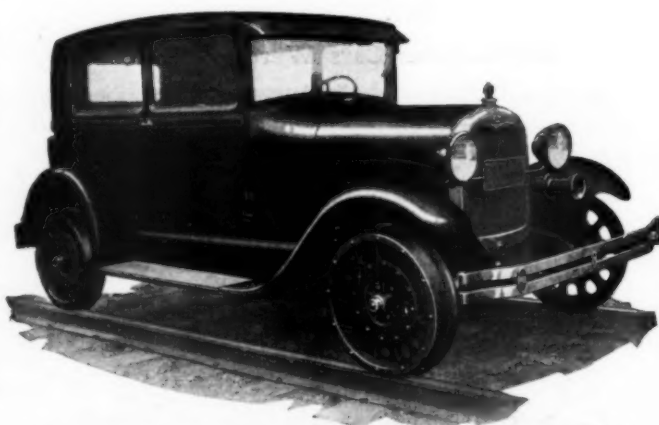
Senator Couzens said that a majority of the committee had approved every part of his resolution except one provision, which was objected to by Senators Pittman and Wagner, but that he was mainly interested in getting the resolution before the Senate.

On May 8 the committee had also submitted a unani-

mous favorable report on Senator Hawes' bill giving to the Interstate Commerce Commission power to prescribe, in any order it may enter approving railway unification or acquisition, such terms and conditions as it may find necessary or desirable to protect employees against uncompensated injury resulting from such acquisition or unification. During the discussion Senator Hawes requested the chairman of the steering committee to place this bill on the preferential list "because it is a change of the law which will do more than the Couzens resolution." He said that while a majority of the committee had been in favor of doing something to restrain the activities of holding companies "there is a fundamental difference in regard to attempting to legislate by joint resolution and by change of statute law."

## Flanged Wheels for Ford Cars

THE standard Ford Model "A" chassis may be converted into a railroad inspection car for small parties by the use of equipment which has recently been developed and placed on the market by the Kalamazoo Railway Supply Company, Kalamazoo, Mich. This equipment consists of four Kalamazoo wood center wheels, 24 in. in diameter, with  $\frac{3}{8}$ -in. pressed and rolled steel tires, and two clamps for locking the steering apparatus in place. The wheels are equipped with hubs especially designed to fit the standard Model "A" Ford axles and will interchange with the Ford wheels without interference to the brake mechanism. The clamps for locking the steering mechanism consist of a short bar with a bolt hole at each



The Wheels May Be Attached or Detached in an Hour

end, two hooked bolts with nuts, and a short cylindrical object with concave ends. Clamps are attached to the steering drag link and the front radius rod at both points where the drag link crosses the radius rod. The bolts are hooked over the drag link and extend down the sides of the radius rod and through the holes in the bar which bears against the underside of the radius rod. The cylindrical piece is inserted between the drag link and the radius rod to prevent them from becoming bent by the force of the nuts on the hooked bolts.

It is said that one of these outfits may be completely attached or detached in less than an hour and that the installation does not require the services of a skilled mechanic.



# Communications and Books

## What Is A Good Safety Record?

ST. PAUL, MINN.

TO THE EDITOR:

Just what actually constitutes an employees' good safety record on a railroad? At present, the best record is that which shows the smallest number of casualties per million man-hours worked. The casualties include the number of employees killed on duty and the number of those who, through injury, are unable to perform their duties for more than 72 hours within the ten-day period immediately following an accident.

The I.C.C. accident summary for the last quarter of 1929 shows that on three comparable trunk lines operating in much the same territory the relation between those injured and those killed is quite inconsistent.

Employees Killed	Employees Injured
0.13	15.21
0.52	11.11
0.23	2.10

It would be interesting to know how such wide variations in these rates are explainable in view of the fact that all Class I railroads are required to report to the Commission on exactly the same basis.

Some railroads, with the same personnel and property during the past two years, have shown employee-injury reductions varying from 50 to 75 per cent this year, but have not accomplished any appreciable reduction in their fatality records.

A SAFETY STUDENT.

## New Books

*Field Engineering*, twentieth edition, revised and enlarged, by William H. Searles, C.E., and Howard Chapin Ives, C.E., civil and consulting engineer. Illustrated, 386 pages, 4½ pages, 5½ in. by 8¼ in. Bound in Paper. Published by John Wiley & Sons, Inc., New York.

The preface to the twentieth edition calls attention to the fact that the appearance of this edition marks the semi-centennial for this handbook of field engineering, which was for many years commonly designated as "Searles." This latest revision consists primarily in the addition of a chapter on Highway Curves, embodying an application of the practice of curve geometry to the requirements of short-radius curves. *Work Routing in Production*, by John Younger, professor of Industrial Engineering, Ohio State University. Published by the Ronald Press Company, New York, 116 pages, 5½ in. by 8½ in. Price \$2.50.

This book, which has been written for production executives and students of industrial engineering, is devoted to the development of the underlying principles of work routing, scheduling and dispatching in industrial establishments and is based upon the current practice of some leading manufacturers. Emphasis is laid on the ways in which the methods described can be applied to lower costs and how they can be fitted to widely varying conditions. Fundamental principles are explained, and practical illustrations and examples show how these principles are applied and just what results can be expected.

*Medios de Fomentar la Construcción de Ferrocarriles Particulares*. By Ing. Santiago Marín Vicuña. 56 Pages, 7 in. by 10½ in. Bound in paper. Published by the Asociación Internacional Permanente del Congreso Sudamericano de Ferrocarriles, Imprenta Universitaria, Estado 63, Santiago, Chile.

This booklet, printed in Spanish, is a report prepared for presentation at the Third South American Congress of Railroads, held in December, 1929, in Santiago, Chile, covering the problems of the privately owned railroads of South America and including recommendations for their solution. The report con-

tains short monographs on the railroad systems of the various countries of North, Central and South America, with tabular data on the mileage of private and government-owned railroads in each country, population, area, the railroad mileage per 100 kilometers and per 1,000 inhabitants, etc. The recommendations include suggestions for co-operation on the part of the South American governments in the development of privately owned railroads, such as lowering the tariff on construction material and rolling stock during the years of development, and exemption from municipal and federal taxes for a similar period of years. Suggestions are also made as to the financing of the properties, the payment of fixed interest charges and subsidies.

*Railroad Consolidation—Its Economics and Controlling Principles*, by Julius Grodinsky. 333 Pages. 6 in. by 9 in. Bound in Cloth. Published by D. Appleton & Co., New York. Price \$3.50.

This work deals with the problem of railroad consolidation from the traffic viewpoint. Quoting from his own article in the *Railway Age* of June 30, 1928, Dr. Grodinsky states, "the basic idea underlying the consolidation movement is, therefore, a traffic problem; not financial; not operating; not one directly and necessarily calculated to preserve the so-called weak roads." He then proceeds in a logical manner to prove his statement. Traffic interchange between carriers, control of traffic movements, long and short haul traffic, connections and competition, direct and indirect routes, closed and open routes—these are some of the captions chosen for very illuminating chapters which deal in a detailed and exhaustive manner with the subject involved. Instance after instance bearing upon the subject in hand are chronicled. The chapter on channels of trade and commerce is extremely well written and brings out the necessity in planning consolidations of giving due consideration to traffic as it moves—based not on tonnage interchanged between prospective consolidated properties but on ton-miles interchanged. Trackage rights, consolidation in action and legislative principles are thoroughly discussed, thus bringing the work to a close. A book valuable to all railroad traffic men as well as to students of traffic problems results.

GEORGE ZABRISKIE.

## Books and Articles of Special Interest to Railroaders

Compiled by Elizabeth Cullen, Reference Librarian,  
Bureau of Railway Economics, Washington, D. C.)

### Books and Pamphlets

*The Click of the Rails*, by J. E. Glover. Personal reminiscences of forty years of railroading by an engineer on the Gulf, Mobile and Northern, who has been with this road for twenty-six years. Includes a brief history of the Brotherhood of Locomotive Engineers, and of the Gulf, Mobile & Northern. Illustrated with pictures of locomotives of various periods. The author's, with the G.M.&N. fuel emblem, is shown on p. 54. 180 p. Pub. by The Railroader, Jackson, Tenn., \$2.

*The Consolidation Equation—An Engineer's Analysis of the Railroad Consolidation Problem*, by Herman W. Ordeman. Concludes that large consolidations are not conducive to public interest, p. 43. Reprints ICC Consolidation plan, p. 46-79. 96 p. Pub. by Traffic Publishing Company, Inc., New York City, \$2.

*Equipment Trust Securities 1930*. The Tenth issue of a very useful handbook, listing the essential details of the more important equipment trust obligations outstanding. 352 p. Pub. by Evans, Stillman & Co., New York City. Apply.

*Laboratory Tests of Reinforced Concrete Arch Ribs*. A report of tests to destruction of 12 arch ribs having a span of 17½ ft. and a rise of 4 ft., subjected to loads up to 95 tons, for the purpose of comparing measured stresses with those determined by computation. 102 pages. Bulletin No. 202, Engineering Experiment Station, University of Illinois. 55 cents.

*The Port of Jacksonville, Fla. (Revised, 1929)*. Prepared by

the Board of Engineers for Rivers and Harbors, War Department in co-operation with the Bureau of Operations, United States Shipping Board, as Part I of their Port Series No. 8 (Revised). Railroad connections, facilities for interchange between rail and water, switching, car demurrage, lighterage and car floatage, absorptions of terminal charges, transit privileges, miscellaneous railroad charges, allowances and regulations, telephone, telegraph, cable, and airport facilities discussed, p. 75-89. "The freight rate situation" p. 89-102. 118 p. Illustrations, maps, and graphs. Pub. by U. S. Govt. Print. Off., Washington, D. C., 30 cents.

*A Practical Scheme for the Nationalisation and Co-ordination of Public Transport*, by A. G. Walkden. Memorandum submitted to the Royal Commission on Transport together with extracts of Mr. Walkden's examination by the Commission. 48 p. Pub. by The Railway Clerk's Association, London, England. Threepence.

*The Radical Campaign Against American Industry As Shown by the Brief and Exhibits Offered to the Federal Trade Commission In Its Investigation Into Public Utilities*. Reproductions of pages of newspapers, magazines, etc., presenting arguments in favor of government ownership compiled by Bernard F. Weadock, a special counsel for the utilities in the Federal Trade Commission hearings. 96 p. Pub. by National Electric Light Association, New York City, Apply.

*Report on Quarantine Inspection of Vessels Entering the Port of New York*, by The Port of New York Authority. "Recommendations: The present restriction of quarantine inspection to the hours from sunrise to sunset (with exceptions later noted) results in delays and inconvenience to passengers, freight and express, and economic losses to steamship companies. Furthermore, the existing quarantine charges at the Port of New York, for special services, such as fumigation, are 50% higher than at other United States ports. The following recommendations are made to relieve these conditions: (1) That the New York Quarantine Station should be open and prepared to make inspections at all hours of the day and night. (2) That the same quarantine fees for special services should apply at the Port of New York as now apply at other United States ports, and that all such fees should be uniform throughout the 24 hours of the day, without surcharges for night inspections. (3) That additional personnel and modern marine equipment, which are necessary and desirable, should be furnished to the New York Quarantine Station." p. 3. 30 p. Charts and Graphs. Pub. by Port of New York Authority, New York City. Apply.

*Special Spanish Railway Number*, *Railway Gazette*, April 28, 1930. Published in connection with the International Railway Congress at Madrid, Spain, this month, this special number is printed in both Spanish and English, and presents the history, present condition, and special problems of the Spanish railways. Mileage, gauge, construction and maintenance practices, electrification of mountain lines, motive-power and equipment, stations, yards, traffic, relations to government, personnel relations including wages, passes, pensions and training, and other phases of Spanish railroad conditions are discussed. An illustrated section adds considerably to the number of remarkable railroad pictures available, both scenic and construction features being shown, and a directory of Spanish railways gives the correct name, mileage, gauge, headquarters, and names of the general manager, chief engineer, chief mechanical engineer, stores superintendent and traffic manager of each of the Spanish railways. The timing of the Sud Express from Irun to Madrid is given on page 116. 116 p. Pub. by Railway Gazette, London, England, 2 shillings, sixpence.

#### Periodical Articles

*American Railroad May Pierce New Section of Peruvian Andes*. "The Peruvian government wants to have the railroad constructed in sections, the first to run from Bayovar to the vicinity of the Andes through newly irrigated areas." The Business Week, May 14, 1930, p. 13.

*Haul Wool West to Eastern Markets*. Photograph of California-Arizona truck train with statement "They (the Arizona wool growers) save 68½ cents a hundred over the rail-water route via Los Angeles, and 38 cents via Galveston." The Business Week, May 14, 1920, p. 6.

## Looking Backward

### Fifty Years Ago

The western general passenger agents, at their Indianapolis meeting, finally adopted the straightforward agreement proposed at the Cincinnati meeting, which is intended to put a stop to the sale of tickets by any but duly authorized agents of the respective companies. Heretofore many roads have sold tickets at agents' discount to notorious ticket scalpers, who have at once put them on the market at a reduction from regular rates.—*Railway Age*, May 20, 1880.

In response to a resolution from the House committee on Pacific Railroads, calling upon the Secretary of War for information as to the saving in expenditures resulting to the Government from the construction of the Northern Pacific, that official included in his reply a report from General William T. Sherman which shows that in comparison with rates which were paid during the year prior to the opening of the railroad, the \$71,590 paid for transportation over the road in the year 1876-1877 represented a saving of over \$400,000. The Government has saved over \$3,000,000 in the cost of military transportation during the 10 years that the Northern Pacific has been in operation.—*Railway Age*, May 20, 1880.

### Twenty-Five Years Ago

Earl Stimson, division engineer on the Baltimore & Ohio Southwestern (now part of the Baltimore & Ohio) at Washington, Ind., has been appointed engineer of maintenance of way at Cincinnati, Ohio.—*Railway Age*, May 19, 1905.

The Texas legislature last Winter passed a resolution to the effect that the state needed more revenue. It then passed the gross receipts bill which is expected to extract from the railways an increase of \$600,000 a year in taxes; the intangible assets bill, which after a specified period is designed to double their taxes, and the franchise tax bill, which it is believed will net \$100,000 more per year. Following that action, the railroad commission issued a new cotton tariff which is expected to reduce the earning capacity of the Texas roads by \$600,000 to \$700,000 per year.—*Railway Age*, May 19, 1905.

From the Senate Committee hearing on railway rate regulation at Washington:

"The people of the country are absolutely dependent upon the railroads for transportation, and it is not more important to establish courts for the determination of civil controversies than it is to provide a tribunal which can see to it that competitors in business have a 'square deal' in reaching their markets."—Albert B. Cummins, governor of Iowa.

It is true that the railroads have been guilty of some abuses and I say this because I have run railroads for 10 years in courts as a judge through receivers. And it was mighty hard sometimes to get receivers who would not cut rates. I had to stand them up at the end of every week and swear them, to be sure, and then I was not quite sure that they were not cutting rates."—William H. Taft, Secretary of War.—*Railway Age*, May 19, 1905.

### Ten Years Ago

The country-wide freight congestion continues with only indistinct changes in the movement of freight or in the prospects of clearing up the trouble, due to the five-weeks' strike.—*Railway Age*, May 14, 1920.

C. L. Hinkle, who recently resigned as general superintendent of the Toledo, St. Louis & Western [now part of the New York, Chicago & St. Louis], has been appointed general manager of the Chicago Great Western.—*Railway Age*, May 14, 1920.



# Odds and Ends of Railroading

## Engineman's Record

Upon the occasion of his retirement after 50 years service on the Pere Marquette as engineman, it was discovered that Calvin Platt, at one time or another in his long career, had guided an engine over every foot of track on the Pere Marquette. In addition, he has run locomotives over several branch lines formerly operated by the P. M., but which have since been abandoned.

## World Bowling Champion Shotwell

Larry Shotwell, clerk at the West End station of the Louisville & Nashville at Cincinnati, competing in the thirtieth annual American Bowling Congress championships at Cleveland recently, emerged from among the ten thousand contestants as the World's individual bowling champion. The Cleveland News said, "There was no fan-fare of trumpets, no advance predictions. Shotwell just clicked off strike after strike and wound up with a three-game series of 774, 25 pins higher than any previous record."

## A Railroad Navy

The latest compilation of transportation equipment made by the Pennsylvania shows that the railroad has a veritable "navy," including 13 ferry boats, 45 tug boats, 159 barges and 105 car floats, with a total of 347 pieces of floating equipment. The rolling stock aggregated 288,165 units, made up of 6,152 locomotives, 7,384 passenger train cars, 270,653 freight equipment cars and 3,976 units of work equipment. The locomotives have a combined tractive effort of something over 155,408 tons, the passenger cars will seat 329,084 persons and the freight cars have a total capacity of 14,634,224 tons. And all this rolling stock and floating equipment is valued at \$736,184,394.

## No Need For Esperanto or Ido Here

An excited passenger rushed alongside the Eureka express of the Northwestern Pacific as it was about to leave the Sausalito terminal on the north shore of San Francisco bay, vociferously interrogating the bewildered passenger directors in a foreign tongue. Conductor Louis G. Bacigalupi, Brakeman Wenzel J. Basl and Frank Lawrence of the crew were called. Our informer does not record the variety of language in which the troubled passenger's difficulties were couched, but it is presumed that they were satisfactorily adjusted because the three trainmen speak fluently eight languages—Spanish, Swiss, Italian, French, German, English, Bohemian and Portuguese. In addition Brakeman Basl has a working knowledge of Chinese.

## "Wooden Ships and Iron Men"

The new train of the New York, New Haven & Hartford, operating between New York and Boston, has been named, most appropriately, the "Yankee Clipper." Not only will each car be named after a famous clipper ship, but paintings of such ships will be hung in each car. The clipper ships so commemorated are the following:

The "Flying Cloud," the most famous of all American clipper ships, and holder of the record fast passage from New York to San Francisco via the Horn, making the trip in 89 days.

The "Surprise," the first clipper ship built in Massachusetts.

The "Stag Hound," pioneer of 1500-2000 ton clippers.

The "Sovereign of the Seas," which shares with the "Flying Cloud" the honor of being best known.

The "Great Republic," the largest clipper ship ever built.

The "James Baines," which made the record Atlantic passage, and once had inscribed in her log, "making 21 knots."

The "Lightning," which held the record for the fastest day's run—436 miles.

The "Flying Fish," a famous boat which was considered by some to be faster than the "Flying Cloud."

The "Donald McKay," which had a good record over 20 years, and which was named after the man regarded by many as the greatest clipper ship builder in the world.

The "John Bertram," a ship which made many good runs and which was named after a famous Salem sea merchant and captain.

The "Red Jacket," one of the handsomest and fastest of clippers.

The "Northern Light," which held the record for the fastest eastbound passage from San Francisco round the Horn.

The "Game Cock," a fine clipper ship which saw 30 years of useful service.

The "Dreadnought," a vessel built for the old Red Cross Line of Liverpool packets and nicknamed by sailors the "Flying Dutchman," because of her driving speed in all kinds of weather.

## Train No. 13

The Baltimore & Ohio recently conducted an investigation as to which railroads operated trains numbered 13. Of 32 time tables examined, 12 of the railroads have no passenger trains No. 13. Among these 12 are: The Boston & Maine, the Delaware, Lackawanna & Western, the Chicago & Alton, and the Baltimore & Ohio. When asked the reason why trains numbered 13 were not run on these roads, H. F. Fritch, passenger traffic manager of the Boston & Maine, replied: "We did have a train No. 13 in our time table up to something like a year ago, when it disappeared on account of a rearrangement in service. It was not omitted for any other reason."

W. F. Griffiths, passenger traffic manager, Delaware, Lackawanna & Western, feels that there is something in the old superstition. Evidently railroad men themselves have passed beyond whatever influence "13" may have, but out of respect for the wishes of the traveling public, the "13 trains" are among the missing. Mr. Griffiths says in part: "It is true that we do not operate any passenger train No. 13, and I believe you will find that we are not alone in this. Personally, I do not regard the usual superstition concerning No. 13 seriously, but I have no doubt that this well-known feeling is the reason for our not having a No. 13 train. Incidentally, to show that we are not entirely overcome by this old fable, we have suburban trains numbered 113, 213 and 713."

"Number 13 trains always made good time and never had a mishap on the Chicago & Alton," said former Passenger Traffic Manager George J. Charlton several years ago. "It was in the year 1900 that we cancelled as a train number what was formerly known as Train 13. I personally was not much in favor of that, but the matter had been agitated for some time, and while the train itself had never had any unlucky experiences, our operating people decided that they had better be on the safe side and cut out No. 13. What were formerly known as Trains 13 and 14 are known today as Trains 14 and 15. These trains, as well as their predecessors, 13 and 14, are pretty generally on time and have met with no serious mishaps in the last 27 years. What might have happened if we had continued to use the number 13 is something which the superstitious railroad officials—if there are such—could tell you about."

Concerning the use—or rather, the lack of use—of Train 13 on the Baltimore & Ohio, Passenger Traffic Manager Calloway says: "We have no rule on this. We operate some express trains, and we number the westbound Chicago Express 13; the eastbound service is No. 14. In other words, we have to take care of express trains with numbers, and we might as well assign a number to that class that some might not like on a passenger train. We occasionally encounter some little objection to berth No. 13 in the sixteen-section sleeping car, but very few people pay any attention to it."

# NEWS of the WEEK



The Boston & Maine's "Minute Man," with locomotive "William Dwyer," at Waltham, Mass.

THE CHICAGO & ILLINOIS MIDLAND has moved its New York offices from 225 Broadway to the Chrysler building, 405 Lexington avenue.

THE RAILWAY CLUB OF PITTSBURGH (Pa.) will hold its next meeting at Fort Pitt Hotel on Wednesday evening, May 21. J. V. Miller, assistant general storekeeper of the Chicago, Milwaukee, St. Paul & Pacific, will present a paper on railroad material handling costs.

THE UNITED STATES COURT OF APPEALS, at Denver, Colo., will hear oral arguments on June 14 on the appeal of the Moffat Tunnel Commission and the Denver & Salt Lake from the district court decision in respect to the validity of the lease covering operation of trains through the Moffat tunnel.

THE NORTHWESTERN PACIFIC has arranged for employee group insurance whereby the employee is given free insurance up to a certain amount, depending upon the length of service, and is permitted to increase this under a contributory plan in which the expense is shared by the employee and the company.

THE ATCHISON, TOPEKA & SANTA FE has applied to the Kansas Public Service Commission for authority to abandon 7.79 miles of line between Harper, Kan., and Anthony. The line was built in 1890 as a part of the old Hutchinson & Southern, which was later purchased by the Santa Fe. Last year 36 cars of wheat and two cars of cattle were shipped from Ascot, the only station, while only four passengers were carried. The line to be abandoned is paralleled by the Orient, the two roads being less than a quarter of a mile apart.

## I. C. C. to Investigate Highway Transport

The Interstate Commerce Commission, on May 15, announced the institution of a comprehensive investigation of the general matter of co-ordination of motor transportation of passengers and property on the public highways by or in connection with or in competition with railroads, whether performed directly or indirectly, with a view to taking such

action as the facts may warrant and for the purpose of making such recommendations to Congress for legislation as may be necessary or desirable.

## Senate Proposes to Restrict Mexican Immigration

A bill to place immigration from Mexico into the United States under quota restrictions, on the national origins basis, was passed by the Senate on May 13 by a vote of 51 to 16. It was stated that this would reduce the number of immigrants allowed to between 1,200 and 1,900 a year, as compared with an average of 58,000 for the past five years. The bill was taken up rather suddenly after the bill introduced by Senator Harris had been re-committed to the committee on immigration last month, after considerable debate. Senator Copeland moved to reconsider the bill and Senator Harris offered an amendment applying the quota only to Mexico.

## P. & S. Winners Announced

Papers written by H. W. Rolston, statistician in the office of the purchasing agent of the Pennsylvania, and P. H. Day, requisition clerk of the Bangor & Aroostook, have been selected as winners of the fourth annual contest conducted by the Purchases and Stores division, A.R.A., among the younger purchasing and stores officers, for papers on purchasing and stores work. Mr. Rolston's paper is entitled, "Products and By-Products of Certain Purchasing Methods" while Mr. Day wrote on the topic, "Is Turnover Always of Primary Importance?", the two papers sharing the honors equally. The winning papers were chosen from fifty or more submitted. The authors will read the winning papers at the annual convention of the Purchases and Stores division at Atlantic City in June.

## Railway Employment Decreasing

The number of employees reported by Class I railways as of the middle of the month of March was 1,547,513, according to a bulletin issued by the Interstate Commerce Commission, which shows a larger reduction as compared with the corresponding month of the previous year than

has been reported for any month since last fall. As compared with March, 1929, this was a decrease of 4.97 per cent and as compared with March, 1928, it was a decrease of 4.85 per cent. The largest reduction was shown in the group of train and engine service employees in which the number was 7.27 per cent less than in March, 1929, but the number in maintenance of equipment and stores shows a decrease of 6.38 per cent and in maintenance of way and structures a decrease of 4.12 per cent.

## Bureau of New Ideas

The Pennsylvania's Bureau of New Ideas, now two years old, has, in the first four months of 1930, found useful and adopted over 30 per cent of the suggestions for improving service which have been submitted by employees. In the first year only 10 per cent of those offered were adopted. Suggestions for improvement have been received from all classes of employees and in every department, and from cities and towns throughout the company's extensive lines. Money awards and appropriate forms of recognition are given. Three special prizes are presented every six months to the persons submitting the best three suggestions; and the 15 prizes of this kind thus far awarded have gone to a store attendant, a brakeman, a fireman, a tinner, a conductor, an electrician, a boiler maker, a clerk and several enginemen, machinists and pipe fitters.

The operation of the Bureau has served to stimulate employees in the development of greater powers of observation, self-expression and constructive thinking.

## Motor Coach Bill Eliminated From Senate Program

The bill for the regulation of interstate motor vehicle passenger transportation, which passed the House in March and was later favorably reported by the Senate committee on interstate commerce, with amendments, is apparently dead so far as this session of Congress is concerned as the result of the action of the Senate steering committee on May 7 in eliminating the bill from the program of bills for consideration before adjourn-



ment. The action was explained on the ground that the bill involves too many controversial issues to be considered in the time remaining. The bill has been so amended that it is no longer in a form satisfactory to any of the interests which originally joined in urging such legislation, the operators and manufacturers of motor vehicles, the state commissions and the railroads.

### Railway Age Honored By Business Publishers

The Associated Business Papers, Inc., an organization of the leading publishers of business periodicals, has awarded to Samuel O. Dunn, editor of *Railway Age*, the first prize for the best editorial published in any business paper in the year 1929. The prize-winning editorial was entitled "Holding Up the Railways" and appeared in the *Railway Age* of January 19, 1929, the subject discussed being the danger involved to the railroads in the rapid growth of the practice of using the routing of traffic as a means to influence railway purchases. The *Railway Age* also received honorable mention for outstanding service to its field for its editorial campaign against "reciprocal buying."

The medal of the Associated Business Papers was awarded to Advertising and Selling for its crusade against the paid testimonial as an advertising device. The first prize for the best series of articles or news reports was awarded to Robert L. Davison of the editorial staff of the *Architectural Record* for a series of articles on architectural research.

### N. Y. Regional Plan Committee Proposes Queens Terminal

A terminal plan for the Queens Plaza district of the Borough of Queens, a companion project to the suggestion for a rail terminal on the Hudson river waterfront of Manhattan reported in the *Railway Age* of March 15, was announced on May 15 by the Committee on the Regional Plan of New York.

The new proposal centers about a transportation terminal dominating the easterly approach to the Queensboro bridge, with a combination railroad and office building rising above the present Sunnyside yards of the Pennsylvania. As a terminal, it would serve jointly for the distribution of local borough traffic from the Long Island Railroad and the Metropolitan transit system; as a transfer point between the Long Island and the proposed trunk line railroads directly connecting Long Island with the rest of the country through the Pennsylvania tunnels under Manhattan to the south and west and via the existing Hell Gate bridge route to the north and east, and as a station on the suburban rapid transit line which, continuing into Manhattan, would constitute a sector of the distributing belt line of the proposed regional suburban transit system.

This terminal is one unit in the system of major passenger terminals for both suburban and trunk line rail traffic proposed by the Regional Plan Committee of New York. Although recognizing "that much of the plan could not be realized ex-

cept on the initiative of the railroad authorities," the committee considers it apparent that "some value is to be obtained from an independently suggested plan suitable for consummation through co-operation between the city and the railroad companies."

### Railway Magazine Editors' Meeting

The eighth annual meeting of the American Railway Magazine Editors' Association was held in Kansas City, Mo., on May 5 and 6, the program of the meeting being devoted to subjects pertaining to the publishing of railroad employees' magazines. Women's activities, as reported in the magazines, were discussed by Miss M. Stevens, associate editor of the *Baltimore & Ohio* magazine; the relation of railroad magazines to newspapers by R. P. Ellis, managing editor of the *Kansas City Post* and K. D. Pulcifer, editor of the *Pennsylvania News*, Western region; how to train local correspondents by Charles Kane, editor of the *Illinois Central* magazine; make-up, by F. M. America, news editor of the *Erie* magazine; and safety, by Walton M. Wentz, editor of the *Pennsylvania News*, Eastern region.

The officers elected for the ensuing year are as follows: President, Walton M. Wentz, editor of the *Pennsylvania News*, Philadelphia, Pa.; first vice-president, Walter A. Johnson, editor of the *Missouri-Kansas-Texas* magazine, St. Louis, Mo.; second vice-president, Benjamin Bell, Jr., editor of the *Chesapeake & Ohio* magazine, Richmond, Va.; third vice-president, I. M. Brown, field editor of the *Missouri Pacific Lines* magazines, St. Louis, Mo., and secretary-treasurer, Miss E. Phillips, associate editor of the *New York, New Haven & Hartford* magazine, New Haven, Conn.

The meeting closed with a dinner on the second evening at which Henry J. Haskell, editor of the *Kansas City Star*, and Dr. Logan Clendenning of Kansas City, were the principal speakers. The next annual meeting will be held in Philadelphia, Pa., in June, 1931.

### Freight Claim Division Meeting at Seattle

The Freight Claim division of the American Railway Association will hold its thirty-ninth annual session at the Olympic Hotel, Seattle, Wash., on June 10 to 13. The program for the four-day session is as follows:

#### TUESDAY MORNING, JUNE 10

##### Opening Exercises

Address: A. A. Murphy, assistant to the president of the Union Pacific

Address: H. G. Taylor, manager of the Public Relations Section, A.R.A., Car Service division

Address: Chairman J. G. Shields

#### AFTERNOON MEETING

Special Order of Business—Prevention of Freight Loss and Damage

Report of Prevention Committee, Chairman W. C. Johnson, freight claim agent, Chicago & North Western

Prevention Activities of Freight Claim conferences during 1929

Perishable Situation in the Rio Grande Valley, by H. V. Cooper, superintendent of Freight Loss and Damage claims of the Gulf Coast

Line, for the Southwestern Claim conference. Florida Perishable Situation, by E. Y. Graves, superintendent of stations and transfers of the Seaboard Air Line, for the Southeastern Claim conference.

Destination Conditions, by J. K. Lovell, freight claim agent of the New York Central, for the Eastern Claim conference.

Co-ordination of Efforts in Freight Claim Prevention, by R. A. Podlech, chief of the Freight Claim Prevention bureau of the Atchison, Topeka & Santa Fe Coast Lines, for the Pacific Coast Claim conference.

Rough Handling—Shock Recording Machine Tests, by V. W. Landon, secretary of the Committee on Co-ordination of the Chicago Terminals of the General Managers' Association, for the Chicago Claim conference.

Flour Damage—Suggested Remedies, by H. R. Grochau, assistant freight claim agent of the Chicago & North Western, for the Northwestern Claim conference.

Livestock Loss and Damage, by J. L. McCormick, superintendent of Freight Loss and Damage claims of the St. Louis-San Francisco, for the Central Claim conference.

Furniture Damage, by J. W. King, freight claim agent of the Chesapeake & Ohio, for the Virginia Claim conference.

General Prevention Discussion.

Action on Prevention committee's report.

#### WEDNESDAY MORNING

Address: C. H. Buford, general manager, western lines, the Chicago, Milwaukee, St. Paul & Pacific, Seattle, Wash.

Report of Committee on Loss and Damage Rules.

Address: E. A. Jack, chairman, Freight Claims and Claims' Prevention committee, National Industrial Traffic League.

#### THURSDAY MORNING

Address: L. C. Gilman, vice-president of the Great Northern.

Election of officers

Joint report of Committees on Loss and Damage Rules and Overcharge Rules

Address: W. C. Fitch, manager of perishable freight traffic, Southern Pacific

#### AFTERNOON MEETING

Address: T. A. Hiam, assistant to the president, Canadian National

Joint report of Committees on Loss and Damage Rules and Overcharge Rules (cont'd.)

Address: W. E. Coman, vice-president, Northern Pacific.

#### FRIDAY MORNING

Address: (Speaker to be chosen later) Shipper-Carrier luncheon.

#### AFTERNOON MEETING

Closing business.

### New England Railroad Centenary

The centennial of steam railroads in New England, which dates from the charter granted the Boston & Lowell Railroad Corporation on June 5, 1830, will be celebrated at Lowell, Mass., with exercises, parade and community demonstrations on Thursday, June 5; under the auspices of the City of Lowell and the Boston & Maine. Mayor Thomas H. Braden has issued a proclamation for observance of Railroad Centennial Day with which observance of the tercentenary of the Massachusetts Bay Colony will also be included. Governor Frank G. Allen will make the principal address.

As a permanent record of the event, the Boston & Maine will present to the city a bronze bas-relief tablet recording the genesis of steam railroads in New England, executed by the sculptor Karl Gruppe. Near the tablet, in Lucy Larcom Park, opposite the site of Lowell's first railroad station, the Boston & Maine is reproducing a 15-foot section of the original roadbed and track of the Boston & Lowell. This roadbed will comprise granite ties and bearing blocks and fish-belly rails.

First of the steam railroads in New England to be incorporated,—and as such first of the 111 separate railroads constituting the present Boston & Maine system,—the Boston & Lowell was opened for service on June 24, 1835, though prior to that date trains had been operated by the Boston & Worcester and the Boston & Providence, which were incorporated a year later than the Boston & Lowell.

The successful locomotive trials at Rainhill, England, in 1829, decided the mill interests of Lowell to petition the Massachusetts Legislature for a railroad charter, and it was from the Stephensons, who had built the successful "Rocket," that the Boston & Lowell purchased its first locomotive.

At the conclusion of the afternoon exercises, a civic parade and community demonstration will start from the Memorial Auditorium, and the parade will be followed by simple dedicatory exercises at the commemorative tablet.

### Sixty-one Millions for Canadian Government Transport

Railway and steamship estimates to the total of \$61,070,000 were tabled in the Canadian House of Commons at Ottawa last week by Hon. C. A. Dunning, Minister of Finance. Of this total sum the amount of \$51,600,000 is to provide for loans to the Canadian National; \$400,000 is to cover a loan to the Canadian Government Merchant Marine; and \$870,000 a loan to the Canadian National (West Indies) Steamships, Limited. The sum of \$8,200,000 is provided to cover the amount required in connection with the administration of the Maritime Freight Rates Act.

The total amount provided for in today's railway estimates is \$2,230,645 less than that which Parliament was asked to vote last year. The major amount of \$51,600,000 requested by way of loan to the Canadian National is to "meet expenditures made or indebtedness incurred (where amounts available on net operating income or investment may be insufficient) by or on behalf of the Canadian National Railways Company." It will cover interest on securities and various other obligations of the company. The amount required under this heading for the fiscal year 1929-30 was \$53,750,000.

The sum of \$400,000 is to cover deficits in operation of the Canadian Government Merchant Marine for the year ending December 31, 1930, as well as capital requirements.

At the last session the sum of \$969,000 was asked for this purpose. Deficits in operation of the Canadian National West Indies Steamships Limited, as well as interest requirements will utilize \$870,000. The sum for this purpose required at the last session was \$945,000.

Of the total amount required to make good deficits resulting from the operation of the Maritime Freight Rates Act, \$1,000,000 is to make good differences between the tariff tolls and normal tolls on a number of Maritime subsidiaries of the Canadian National System; \$4,750,000 is to make good to the Canadian

National the deficit in receipts and revenues, occurring during the year 1930 of the eastern lines, as provided by the Maritime Freight Rates Act. The further sum of \$2,450,000 is the amount of the deficit in receipts and revenues occurring in the amount of reduction in coal under the application of the Maritime Freight Rates Act.

Government legislation has been introduced in the House of Commons under which the amount of money which the Canadian National may spend on its terminal facilities in Toronto may be increased from \$10,500,000 to \$14,150,000. The bill, which was introduced by Hon. T. A. Crerar, Minister of Railways and Canals, was given first reading.

The minister informed Hon. R. B. Bennett, Opposition leader, that the total amount spent by the Canadian National on its Toronto facilities, including the viaduct and yard changes, was about \$17,000,000.

Granting of a cost rate on coal from Alberta to Manitoba and Saskatchewan is under consideration by the government, Hon. T. A. Crerar, Minister of Railways, informed the House of Commons today in reply to a question from H. B. Adshear (Labor, Calgary East). A cost rate has already been arranged on shipments of Alberta coal to Ontario.

The government has received an application from the western bituminous coal operators for the extension of this arrangement to the other two Prairie Provinces. This request is receiving the attention of the government together with other similar requests and the general question of fuel transportation.

### Peace River Pacific Outlet Favored

With the approach of a general federal election in Canada political and trade organizations in Alberta and British Columbia are exerting pressure on the government at Ottawa to make a move for a Pacific railway outlet for the Peace River country. Over a year ago an agreement was entered into between the Canadian Pacific and Canadian National for the building of branch lines in Alberta but with no definite undertaking about a Pacific outlet. Last week in the Parliament at Ottawa, British Columbia and Alberta members again pressed the government to give an undertaking that something would be done soon and that Premier King's promise made at Vancouver in the fall of last year would be observed.

Replying to these urgent demands Premier King repeated what had already been stated by Hon. Charles Dunning, Minister of Finance and former Minister of Railways, and by Hon. Thomas A. Crerar, present Minister of Railways, that the railway heads had been urged to give an early answer to the government as to their intentions on the matter and that if they could not agree then the government would step in and have the Canadian National build a line to connect the Peace River area with the Pacific Great Eastern road which runs down to Vancouver.

Premier King's concluding words on this matter were:—

"I submit that if the government attempted to bring forward a project for a railway from the Peace River country to the Pacific ocean or to connect at any given point or points with other lines which run to the Pacific, without having in its possession the views of the two railway companies and their reports upon the surveys which they had made, it would be very difficult if not impossible to get the necessary support to pass the legislation through parliament.

"Happily, in more particulars than one, we as a government, are in a different position to-day from the position we have been in during previous years in our dealings with many matters in parliament. We can with some degree of certainty, when we bring forward a measure which we know to be supported by necessary information and essential consideration, undertake to say that in all probability the purpose of the measure will be implemented in its course through both houses. I want to repeat here what I said at Vancouver: We have asked each of the railway companies to expedite the surveys which they are making. I have spoken personally to Mr. Beatty, president of the Canadian Pacific and to Sir Henry Thornton, president of the Canadian National. The present Minister of Railways and Canals said to-night that he also has expressed the views and desires of the government to the presidents of these two systems, and the former Minister of Railways and Canals, the present Minister of Finance, made a similar statement. We all have impressed upon the presidents of these systems that it is the desire of the government to have this matter expedited and the surveys completed, that it is our view that at an early date agreement should be arrived at by the two companies as to the route which they will jointly recommend, and that failing agreement by them the government itself will undertake to make a decision in the matter."

### Fuel Convention Exhibit

The exhibition of railway equipment and supplies, held in conjunction with the twenty-second annual convention of the International Railway Fuel Association at the Hotel Sherman, Chicago, May 6 to 9, inclusive, was somewhat less extensive than a year ago, but the number of companies represented was not greatly reduced. According to the secretary's records, there were 83 exhibitors in 1929 and 75 exhibitors in 1930. Owing to business conditions, a somewhat larger drop was anticipated and would no doubt have been realized, but for the efforts of the supply association officers, headed by President C. O. Jenista, Barco Manufacturing Company, Chicago. A list of the companies exhibiting this year, the products on display and the representatives in attendance is given below.

On the last day of the convention, the executive committee of the International



Railway Supply Men's Association elected the following officers for the ensuing year: President, S. A. Witt, Detroit Lubricator Company, Chicago; vice-president, L. R. Pyle, Locomotive Firebox Company, Chicago; secretary, C. M. Hoffman, Dearborn Chemical Company, Chicago; treasurer, E. J. Fuller, Hunt-Spiller Manufacturing Corporation, Boston, Mass. W. J. Dickinson was re-elected assistant secre-

tary-treasurer. Three new members of the executive committee were elected, which now includes: J. W. Fogg, MacLean-Fogg Lock Nut Company, Chicago; John Baker, Locomotive Firebox Company, Chicago; Frank Fisher, service engineer of the Pilliod Company, Chicago; J. E. Buckingham, Worthington Pump & Machinery Co., Harrison, N. J.; H. J. Mann, The Standard Stoker Company,

Chicago; F. E. Davern, Nathan Manufacturing Company, Buffalo, N. Y.; J. W. Hulson, Hulson Grate Company, Keokuk, Iowa; G. R. Rohow, National Refining Company, St. Paul, Minn.; and C. T. Winkless, Chicago, Rock Island & Pacific, Chicago.

The list of exhibitors follows:

American Arch Company, New York.—Locomotive brick arch. Represented by J. D. Brandon.

## Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 172 Steam Railways, Including 16 Switching and Terminal Companies.

FOR THE MONTH OF MARCH, 1930 AND 1929

Item	United States		Eastern District		Southern District		Western District	
	1930	1929	1930	1929	1930	1929	1930	1929
Average number of miles operated .....	242,333.16	242,126.84	60,601.26	60,425.16	45,778.70	45,766.23	135,953.20	135,935.45
Revenues:								
Freight .....	\$345,203,806	\$393,861,998	\$150,554,376	\$173,718,940	\$65,535,415	\$72,135,035	\$129,114,015	\$148,008,023
Passenger .....	a 61,787,893*	b 71,890,136	32,515,060	36,630,629	9,993,234	12,100,129	19,279,599	23,159,378
Mail .....	9,560,553	c 11,046,939	3,634,185	3,725,386	1,599,936	1,626,455	4,326,432	5,695,098
Express .....	11,109,438	12,835,990	5,188,694	6,274,630	1,778,241	2,098,399	4,142,503	4,462,961
All other transportation .....	14,934,168	17,279,095	8,520,733	9,844,812	1,180,796	1,275,653	5,232,639	6,158,630
Incidental .....	9,359,915	9,942,245	4,818,494	4,897,451	1,598,967	1,800,005	2,942,454	3,244,789
Joint facility—Cr. ....	1,085,025	1,040,782	342,679	342,456	201,602	154,842	540,744	543,484
Joint facility—Dr. ....	324,244	333,867	80,414	86,337	32,701	33,630	211,129	213,900
Railway operating revenues .....	452,716,554	517,563,318	205,493,807	235,347,967	81,855,490	91,156,888	165,367,257	191,058,463
Expenses:								
Maintenance of way and structures .....	61,620,176	66,189,139	25,021,619	26,185,781	11,706,395	13,730,795	24,892,162	26,272,563
Maintenance of equipment .....	93,973,940	102,398,088	43,821,653	48,919,066	16,845,386	17,782,335	33,306,901	35,696,684
Traffic .....	10,889,337	10,358,690	4,299,722	3,959,286	1,966,993	1,904,279	4,622,622	4,495,125
Transportation .....	164,859,670	178,805,555	78,379,063	84,657,453	26,954,519	29,318,994	59,526,088	64,829,108
Miscellaneous operations .....	4,597,257	4,796,193	2,139,194	2,220,400	715,677	709,827	1,742,386	1,865,966
General .....	16,350,316	16,089,121	7,270,772	7,022,471	2,718,152	2,715,876	6,361,392	6,350,774
Transportation for investment—Cr. ....	1,011,932	879,109	214,252	164,663	96,241	101,853	701,439	612,593
Railway operating expenses .....	351,278,764	377,757,677	160,717,771	172,799,794	60,810,881	66,060,256	129,750,112	138,897,627
Net revenue from railway operations .....	101,437,790	139,805,641	44,776,036	62,548,173	21,044,609	25,096,632	35,617,145	52,160,836
Railway tax accruals .....	30,145,796	32,619,406	12,183,646	13,647,715	6,062,729	6,102,262	11,899,421	12,869,429
Uncollectible ry. revenues .....	92,065	123,493	42,752	55,558	10,245	20,970	39,068	46,965
Railway operating income .....	71,199,929	107,062,742	32,549,638	48,844,900	14,971,635	18,973,400	23,678,656	39,244,442
Equipment rents—Dr. balance .....	8,053,456	7,512,503	3,812,756	3,651,377	496,969	515,177	3,743,731	3,345,949
Joint facility rent—Dr. balance .....	2,072,245	2,145,712	1,011,815	1,083,555	237,762	197,093	822,668	865,064
Net railway operating income .....	61,074,228	97,404,527	27,725,067	44,109,968	14,236,904	18,261,130	19,112,257	35,033,429
Ratio of expenses to revenues (per cent) .....	77.59	72.99	78.21	73.42	74.29	72.47	78.46	72.70

FOR THREE MONTHS ENDED WITH MARCH, 1930 AND 1929

Average number of miles operated .....	242,354.59	242,126.45	60,602.32	60,429.46	45,774.40	45,762.36	135,977.87	135,934.63
Revenues:								
Freight .....	\$1,010,366,141	\$1,124,879,142	\$443,898,839	\$495,434,946	\$193,940,511	\$210,092,289	\$372,526,791	\$419,351,907
Passenger .....	e 193,487,894	f 215,279,580	101,812,916	109,907,695	31,219,590	35,627,641	60,455,388	69,744,244
Mail .....	27,824,829	g 29,120,219	10,562,506	10,574,408	4,692,847	4,755,334	12,569,476	13,790,477
Express .....	27,356,159	31,466,772	12,444,983	15,004,662	4,422,076	5,255,351	10,489,100	11,206,759
All other transportation .....	43,149,500	49,480,647	24,918,740	27,983,517	3,329,585	3,516,661	14,901,175	17,980,469
Incidental .....	27,507,053	28,859,564	14,189,563	14,842,579	4,453,253	4,602,683	8,864,237	9,414,302
Joint facility—Cr. ....	3,229,811	3,093,672	1,016,811	1,039,676	565,521	450,801	1,647,479	1,603,195
Joint facility—Dr. ....	938,902	955,094	234,401	241,252	100,274	101,466	604,227	612,376
Railway operating revenues .....	1,331,982,485	1,481,224,502	608,609,957	674,546,231	242,523,109	264,199,294	480,849,419	542,478,977
Expenses:								
Maintenance of way and structures .....	169,707,086	180,155,104	71,714,284	74,714,686	34,155,224	37,114,514	63,837,578	68,325,904
Maintenance of equipment .....	279,128,739	296,998,221	130,496,792	142,071,049	49,732,813	51,361,053	98,899,134	103,566,119
Traffic .....	32,950,513	31,310,597	12,796,032	11,778,149	6,199,425	6,036,945	13,955,056	13,495,503
Transportation .....	496,046,687	529,913,478	235,211,762	249,438,251	80,110,596	85,436,910	180,724,329	195,038,317
Miscellaneous operations .....	13,942,661	14,074,378	6,573,223	6,578,202	2,077,032	2,037,092	5,292,406	5,459,084
General .....	49,407,504	47,948,969	21,915,933	20,866,032	8,145,621	8,082,513	19,345,599	19,000,424
Transportation for investment—Cr. ....	2,764,699	2,340,404	471,940	468,570	323,407	233,706	1,969,352	1,638,128
Railway operating expenses .....	1,038,418,491	1,098,060,343	478,236,086	504,977,799	180,097,304	189,835,321	380,085,101	403,247,223
Net revenue from railway operations .....	293,563,994	383,164,159	130,373,871	169,568,432	62,425,805	74,363,973	100,764,318	139,231,754
Railway tax accruals .....	88,372,893	95,577,395	35,173,713	38,546,613	17,771,396	18,377,023	35,427,784	38,653,759
Uncollectible ry. revenues .....	274,049	278,999	131,204	116,419	35,483	55,893	107,362	106,687
Railway operating income .....	204,917,052	287,307,765	95,068,954	130,905,400	44,618,926	55,931,057	65,229,172	100,471,308
Equipment rents—Dr. balance .....	22,683,186	21,935,142	11,785,947	11,961,050	508,231	357,986	10,389,008	9,616,106
Joint facility rent—Dr. balance .....	5,980,238	6,048,839	2,840,406	2,960,653	660,358	543,703	2,479,474	2,544,483
Net railway operating income .....	176,253,628	259,323,784	80,442,601	115,983,697	43,450,337	55,029,368	52,360,690	88,310,719
Ratio of expenses to revenues (per cent) .....	77.96	74.13	78.58	74.86	74.26	71.85	79.04	74.33

\* Includes \$3,185,789 sleeping and parlor car surcharge. b Includes \$3,376,164 sleeping and parlor car surcharge. c Includes approximately \$1,364,227 back mail pay. d Includes \$9,447,302 sleeping and parlor car surcharge. e Includes \$9,894,444 sleeping and parlor car surcharge. f Includes approximately \$1,429,492 back mail pay.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

- Thomas Ferguson, William Haag, Thomas Mahar, Edward Mulcahy, W. E. Salisbury and A. M. Sucese.
- American Locomotive Company, New York.—Lateral motion device; bell ringer; steam pipe casing and reverse gear. Represented by N. C. Naylor, Hunter Michaels, W. S. Morris, Robert Brown and Arthur Haller.
- American Throttle Company, New York.—Multiple throttle. Represented by F. A. Schaff, R. M. Ostermann, G. E. Ryder, R. R. Porterfield, Bard Browne, E. A. Averill, K. E. Stilwell and R. J. Van Meter.
- Argyle Railway Supply Company, Chicago.—Cabooses and station stoves. Represented by A. H. Green and B. B. Shaw.
- Badeker Manufacturing Company, Chicago.—Metal packing for locomotive piston rods and valve stems. Represented by A. N. Willis.
- Baldwin Locomotive Works, Philadelphia, Pa.—Literature. Charles Riddell, C. E. Hale, C. H. Gaskill, Henry Blanchard and W. H. Evans.
- Barco Manufacturing Company, Chicago.—Flexible joints; reservoir joints; metallic engine and tender connections; metallic steam heat car connection; power reverse gear; lubricated plug valves; smoke-box blower fitting and low water alarm. Represented by F. N. Bard, C. L. Mellor, W. J. Behlke, F. S. Stiles, F. M. Roby, C. O. Jenista, J. L. McLean, L. E. Livingston and T. B. Nugent.
- Bethlehem Steel Company, Bethlehem, Pa.—Illuminated photographs of Bethlehem auxiliary locomotive. Represented by R. J. McCarty, Jr., R. S. Folk, I. C. Jordan, F. M. Morley and G. W. Armstrong.
- Bird-Archer Company, The, Chicago.—Locomotive water conditioner; blow-off cock equipment and sludge removers. Represented by H. C. Harragin, F. K. Tutt, C. G. McGurn, J. J. Clifford, P. G. Jones, R. A. Wilsey, W. A. Kline, V. E. McCoy and S. P. Foster.
- Bradford Corporation, Chicago.—Front end and back head throttle valves; draft gear, bolsters and brake beams. Represented by E. J. Barnett, A. C. Bodeau, A. A. Helwig, J. C. Keene, H. C. Priebe and B. C. Wilkerson.
- Burnside Steel Foundry Company, Chicago.—Locomotive special electric steel casting and firing tools. Represented by W. H. Moore.
- Clark Manufacturing Company, Philadelphia, Pa.—Multiplex pressure devices; piston parter; bridge jack; frame bolt jack; pinch and jumping box; shipping, skidding or wheel pivot; connecting jack; spike puller; crow bar; cable grip; firemen's tools and shipping box. Represented by H. J. Smith.
- J. S. Coffin, Jr., Company, The, Englewood, N. J.—Feedwater heater system. Represented by J. S. Coffin, Jr., R. P. Peckett, Jr., Paul Willis, E. L. Schellens, C. W. Wheeler, G. W. Usherwood, E. E. Clothier, R. K. Smith, C. S. Edgerle and W. T. Comley.
- Consolidated Ashcroft Hancock Company, Inc., New York.—Safety valves; gages; inspirators; globe and angle valves; water columns; boiler checks; steam whistles and cut-off control gages. Represented by C. L. Brown, J. H. Bush, P. H. Ryan, W. J. Hall, J. S. Smith and C. W. Corning.
- Corley-DeWolfe Company, Elizabeth, N. J.—Pipe unions. Represented by R. A. Corley, H. E. Corley, Ralph Sheafe and C. P. Fitzgerald.
- Dearborn Chemical Company, Chicago.—Boiler feedwater treatment; wayside treaters; rust preventative and cleaning compounds. Represented by C. M. Hoffman, F. B. Horstmann, L. P. Bowen, L. D. Brown, S. J. Johnson, S. E. Moore and Fred Hooker.
- Detroit Lubricator Company, Detroit, Mich.—Mechanical oiler; automatic oil reducer; automatic flange oiler; flange oiler feed nozzle hydrostatic lubricator and transfer filler for hydrostatic lubricators. Represented by S. A. Witt, E. F. Milbank, C. E. Sperry, W. D. Knox and C. C. King.
- Paul Dickinson, Inc., Chicago.—Cast iron caboose jacks and clamp car jacks; cast iron steam exhaust heads; ventilators (cast iron and all metals). Represented by A. J. Filkins and A. E. Engman.
- Duff-Norton Manufacturing Company, The, Pittsburgh, Pa.—Pneumatic ball-bearing screw jacks; high speed ball-bearing self-lowering screw jacks; journal jacks; automatic lowering jacks and attachments. Represented by C. N. Thulin and E. E. Thulin.
- Duntley-Dickinson Company, Chicago.—Motor winches; safety hand winches; variable speed transmission; car mover; train car indicator and industrial brooms. Represented by W. J. Dickinson, C. A. Duntley, P. B. Sheppard and R. S. Jacobsen.
- Edna Brass Manufacturing Company, The, Cincinnati, Ohio.—Mechanical lubricators; automatic oilers; water columns; air manifolds; boiler checks; fire extinguishers; rigid water gages and flange oiler. Represented by E. O. Corey, William Beck and F. S. Wilcoxon.
- Firebar Corporation, Cleveland, Ohio.—Firebars. Represented by J. S. Thompson, M. J. Bernet, M. P. Van Woert, Robert Watson and R. G. Kelly.
- Franklin Railway Supply Company, Chicago.—Literature. Represented by W. T. Lane, Samuel Rosenfeldt, R. T. De Mott, C. J. Buck and W. A. Cauthers.
- Garlock Packing Company, Palmyra, N. Y.—Mechanical packings. Represented by H. J. Ramshaw, J. F. Franey and Roy Chambers.
- Gibbs Grease Cellar Plate, Chicago.—Grease cellar plate. Represented by W. L. Gibbs.
- Gilg, Henry F., Pittsburgh, Pa.—Valve and rolled hollow staybolt steel. Represented by H. F. Gilg.
- Gold Car Heating & Lighting Co., Brooklyn, N. Y.—Pressure regulators; train pipe valve; steam hose couplers; valve for air pumps; fin tubing and vapor regulator. Represented by R. L. Belknap, J. T. Smith and A. D. Stuver.
- Graham-White Sander Corporation, Roanoke, Va.—Steam and electric locomotive sanders and sand spreaders. Represented by W. L. Ranson and F. H. Smith.
- Grip Nut Company, The, Chicago.—Lock nuts. Represented by W. E. Sharp, J. H. Sharp, L. W. Kass and R. F. Repasz.
- Hanna Stoker Company, The, Cincinnati, Ohio.—Automatic stoker for locomotives. Represented by W. T. Hanna, C. D. King and S. K. Witt.
- Hulson Grate Company, Keokuk, Iowa.—Tuyere-type locomotive grates. Represented by A. W. Hulson, J. W. Hulson, H. N. Gardner and E. E. Bergman.
- Hunt-Spiller Manufacturing Corporation, Boston, Mass.—Sectional packing rings; cylinder packing; cylinder bushings; cylinder bull-rings and pistons; valve bushings; packing rings and bull-rings; hub plates or liners; crosshead shoes; floating rod bushing; shoes, wedges and packing rings. Represented by J. G. Platt, V. W. Ellet, E. J. Fuller, F. B. Hartman, R. R. Wells, C. L. Galloway, F. W. Lampton and D. F. Hall.
- International Correspondence Schools (Railroad Department), Scranton, Pa.—Educational subject matter. Represented by E. M. Sawyer, F. S. Powell and David Groves.
- Johns-Manville Corporation, New York.—Pipe and boiler insulation; tape; refractory cements; locomotive and power plant packings; steel passenger and refrigerator car insulation; decorative and industrial floorings and friction materials. Represented by C. S. Clingman, J. C. Younglove, Thomas O'Leary, Jr., J. H. Trent, R. J. Offutt, B. J. Queen, P. R. Austin and H. H. Greece.
- Leslie Company, Lyndhurst, N. J.—New and improved type of steam heat regulators (all sizes), featuring all working and wearing parts renewable, and all made of stainless steel and nickel alloy. Represented by J. J. Cizek.
- Lima Locomotive Works, Inc., New York.—Pictures of Lima super-power steam locomotives. Represented by W. H. Winterrowd, J. L. Long, H. W. Snyder, M. K. Tate and A. S. Steinmetz.
- Locomotive Finished Material Company, Atchison, Kan.—Cylinder piston head and packing; floating bushing; blow-off cock muffler. Represented by R. L. McIntosh, E. G. Purcell and G. Taylor.
- Locomotive Firebox Company, Chicago.—Thermic syphon model. Represented by A. A. Taylor, C. M. Rogers, E. J. Reardon, J. Baker, T. F. Klein, William Mitchell and R. A. Carr.
- Lower Stoker Company, Pittsburgh, Pa.—Data on locomotive stokers. Represented by N. M. Lower.
- Lunkenheimer Company, The, Cincinnati, Ohio.—Valves. Represented by George Cook, Edward Reinertsen and Howard Evans.
- MacLean-Fogg Lock Nut Company, Chicago.—Lock nuts; water-tight bolts and unitary nuts. Represented by J. W. Fogg, J. A. MacLean and A. W. MacLean.
- W. H. Miner, Inc., Chicago.—Friction draft gear; rolling-rocker side bearings and safety hand brakes. Represented by B. S. Johnson and R. J. Miner.
- Nathan Manufacturing Company, New York.—Mechanical lubricators; injectors; water columns; low-water alarms and globe and angle valves. Represented by Richard Welsh, J. A. Kelly, F. J. Murphy and F. Ehredt.
- National Railway Devices Company, Chicago.—Safety firedoor. Represented by E. J. Gunnison.
- Ohio Injector Company, The, Chicago.—Mechanical lubricator; low-water alarm; injectors; boiler checks; hydrostatic lubricators and flange oiler. Represented by W. S. Furry, W. H. Malone, N. M. Barker and F. B. Farnsworth.
- Okadec Company, Chicago.—Front end hinge; automatic cylinder cocks; tender hose couplers; automatic drain; blow-off and blower valves; cylinder safety valves; water glass protectors; light blow-off mufflers and atomizing lubricators. Represented by A. G. Hollingshead, G. P. Dirth and C. W. Ploen.
- Paxton-Mitchell Company, Omaha, Neb.—Metal packing for valve stems and piston rods; also air pump packing. Represented by J. J. Keliber and H. J. Molloy.
- Permutit Company, The, New York.—Model of water softener and filter; exhibition of results of Permutit softening on railroads. Represented by J. R. Crocker, H. G. Taylor, H. P. Sherwood and F. S. Dunham.
- Pilliod Company, The, New York.—Valve gear. Represented by F. H. Clark, W. H. Bellmaine and Frank Fisher.
- Pilot Packing Co., Inc., Chicago.—Packing. Represented by Joseph Sinkler and R. N. Sinkler.
- Pyle-National Company, The, Chicago.—Turbo generators; flood lights; safety-first switches; plugs and receptacles; cab connection fittings; safety hand lamps; cab, classification and marker lamps. Represented by J. W. Johnson, William Miller, J. A. Amos, G. E. Haas, Walter Smith, Walter Jansen, J. V. Baker and William Ross.
- Railway Journal, Chicago.—Railway publication. Represented by E. C. Cook, J. H. Harris and D. Doniker.
- Railway Purchases & Stores, Chicago.—Magazines. Represented by Edward Wray, H. B. Kirkland and K. F. Sheeron.
- Roberts & Schaefer Company, Chicago.—Side-cut, non skim cooling gate. Represented by C. L. McCoy and G. O. Morford.
- Sargent Company, Chicago.—Steam and pressure gages; water columns; water glass protectors; 3-face gage; 2-seat gage cocks; blower valves; water glass cocks and gaskets. Represented by L. L. Schultz and W. H. Bentley.
- Sawards Journal, New York.—Publication. Represented by H. Sears.
- Wm. Sellers & Co., Inc., Philadelphia, Pa.—Exhaust feedwater heater; non-lifting injectors and equipment; starting valves; rail washer and safety squirt. Represented by P. E. Raymond, J. R. New and J. B. Davis.
- Simmons-Boardman Publishing Company, New York.—Railway Age and Railway Mechanical Engineer. Represented by H. A. Morrison, J. M. Rutherford, R. E. Thayer, E. L. Woodward and W. N. Yadon.
- Spring Packing Corporation, Chicago.—Spring journal box packing. Represented by J. P. Landreth and W. M. Gibbs.
- Standard Auto-Tite Joints Company, Pittsburgh, Pa.—Metallic steam heat connection; metallic connections between locomotive and tenders; flexible ball joints for blower wash-out lines and other general connections on steam, air, water, gasoline and oil coaches and tenders. Represented by A. M. Frauchenheim and E. H. Mattingley.
- Standard Brake Shoe & Foundry Co., Chicago.—Grate bars; bands for locomotive and tender springs and brake shoes. Represented by C. K. Elliott, E. A. Mann and S. P. Beddow.
- Standard Locomotive Equipment Company, Toledo, Ohio.—Standard power reverse gears and fire doors. Represented by G. C. Seidel.
- Standard Steel Works Company, Chicago.—Literature. Represented by Charles Riddell, C. E. Hale, C. H. Gaskill, Henry Blanchard and W. H. Evans.
- Standard Stoker Company, Inc., Chicago.—Stoker; coal pusher; pictures of locomotives; stoker equipped and literature and descriptive matter. Represented by F. P. Roesch, H. S. Mann, F. C. Pickard, E. T. Schroeder, C. T. Hansen, A. C. Patterson and G. A. Edwards.
- Steam Coal Buyer, Chicago.—Magazines. Represented by J. A. Harris.
- Superheater Company, The, Chicago.—Superheater; feedwater heater and exhaust steam injector. Represented by G. E. Ryder, R. M. Ostermann, C. H. True, N. T. McKee, Ward Browne, R. R. Porterfield, E. A. Averill, W. A. Buckbee, R. J. Van Meter, K. E. Stilwell, George Dolan, George Fogg, H. V. Jones, C. R. Fairchild and H. C. Bell.
- Swanson Company, The, Chicago.—Locomotive gage holders. Represented by O. W. Swanson.
- Texas Company, The, Chicago.—Equipment lubricants. Represented by E. Wegner, F. S. Freeman, J. H. Wood and J. L. Lavallee.
- T-Z Railway Equipment Company, Chicago.—Metallic packing, blow-off valve, smoke prevention nozzle; blower nozzle; tender hose couplings and strainer; boiler washout and arch tube plugs and automatic drain valves. Represented by G. S. Turner, J. S. Lemley and N. B. Van Arsdale.
- Union Asbestos & Rubber Co., Chicago.—Asbestos materials. Represented by A. J. Rudolph.
- Valve Pilot Corporation, New York.—Locomotive recorder and valve pilot. Represented by W. B. Wait, J. L. Bacon, W. N. Bacon, C. F. Pennypacker, C. D. Jones and J. L. Davidson.
- Vapor Car Heating Company, Inc., Chicago.—Locomotive steam heat equipment, including stop valves, pressure reducing valves, steam gages and flexible metallic joints; car heating, including automatic unit heat control, fin-type and plain pipe radiation and steam hose couplers. Represented by L. H. Gillick, E. E. Smith, N. F. Burns and E. C. Post.
- Viloco Railway Equipment Company, Chicago.—Sanders; bell ringer; pneumatic whistle operator; automatic rail washer; locomotive exhaust pipe and grease lubricators. Represented by A. G. Hollingshead, G. P. Dirth and C. W. Ploen.
- Whiting Corporation, Harvey, Ill.—Literature. Represented by H. K. Christie.
- Worthington Pump & Machinery Corp., Harrison, N. J.—Locomotive feedwater heating equipment (open type) and movie machine illustrating various actual installations. Represented by J. F. Buckingham, J. M. Lammedee, D. S. Ellis, J. F. Cosgrove, W. Christiansen, S. L. Brownlee, W. Clark, A. R. Dawson and T. C. McBride.



## Traffic

The T. A. T. Maddux Air Lines report that in the month of April they carried in their planes 5,165 passengers, which is 1,082 more than were carried in March.

The New York Transfer Company, baggage carrier in New York City, has petitioned the New York State Public Service Commission for authority to increase by ten cents the price for each trunk or bag, the rates established by the commission in May, 1926, having resulted in a loss of \$10,000 yearly.

The Canadian National opened 238 miles of branch lines for regular service between Winnipeg, Man., and The Pas on May 18. The branch lines opened include: Spruce Lake, Sask., to Frenchman Butte, 31.6 miles; Speers to Rabbit Lake, 37 miles; Shellbrook to Medstead, 75.5 miles; Sturgis to Hudson Bay Junction, 71.4 miles and Willow Brook to Parkerview, 22.3 miles.

The Interstate Commerce Commission has begun an inquiry for the purpose of obtaining information on which to base a decision as to whether it shall order a formal investigation of the practices of freight forwarding companies, as urged by former commissioner J. B. Campbell, in a letter to the commission. It is averred that the companies have been receiving concessions and preferences from affiliated railroads.

The Illinois Central, the St. Louis-San Francisco and the Union Pacific have established through sleeping car service between New Orleans, La., and Denver, Colo. Cars leave New Orleans at 8:40 p.m. over the Illinois Central and arrive in Memphis, Tenn., at 7:10 a.m. where they are delivered to the St. Louis-San Francisco. They arrive at Kansas City at 8:30 p.m. and leave over the Union Pacific at 10:00 p.m. to arrive in Denver at 1:00 p.m. the following day. Eastward the cars leave Denver at 3:00 p.m., Kansas City at 9:00 a.m., and Memphis at 11:05 p.m.; arrive in New Orleans at 5:45 a.m.

The Crescent Limited of the Southern Railway, in the five years ending with April 26, 1930, arrived in Atlanta (southbound) on time 1793 days, being late only 33 times, a punctuality record of 98.2 per cent; and arrived in Washington (northbound) on time 1751 days, a record of 95.9 per cent. This run of 637½ miles, between Atlanta and Washington, is made, southbound, at 38.64 miles per hour and northbound at about the same rate. The trains maintained schedule, southbound during these five years, on 99.6 per cent of the trips and northbound on 99 per cent, the difference between these figures and the percentages reported above being explained, apparently, by late arrivals from connecting lines.

Associations of Pennsylvania and Maryland coal operators have filed with

the Interstate Commerce Commission a complaint attacking the track delivery rates on bituminous coal from mining districts in those states to destinations in the New England states, New York, New Jersey, Pennsylvania, Delaware, Virginia, West Virginia and the District of Columbia as excessive, and preferential in their relationship as between destination points. The complaint also attacks the adjustment of the rates for tidewater transshipment over piers at New York harbor points, Philadelphia and Baltimore. In a statement issued in connection with the complaint the Central Pennsylvania Coal Producers' Association said that while New England spends \$70,000,000 a year as freight on bituminous coal the producers of the coal receive only \$40,000,000.

The Sacramento Northern on May 8 established through freight service between the territory in Solano county, served by its Vaca Valley branch, and points reached by the Sacramento Northern. This service follows the completion of a 7½ mile connection between Creed, Cal., a station 32 miles west of Sacramento on the Sacramento Northern main line, and Vacaville Junction, a station on the Vaca Valley branch. The Vaca Valley branch, 15 miles in length, extends from Vacaville to Vallejo and from Fairfield to Suisun. This branch was originally constructed as a part of the projected Vallejo Northern, planned to operate between Vallejo and Sacramento. Before the completion of the Creed-Vacaville Junction connection, traffic originating on the branch moved from Suisun to Sacramento by way of the Southern Pacific.

### Commercial Stocks of Coal

Commercial stocks of bituminous coal used largely for industrial purposes amounted to 33,100,000 tons on April 1, 1930, according to the quarterly survey just completed by the United States Bureau of Mines, Department of Commerce. In comparison with the amount on hand at the beginning of the previous quarter, this is a decrease of 7,200,000 tons and it is 3,800,000 tons less than the quantity in storage on the same date last year. Exports during the first quarter of 1930 averaged 219,000 tons a week as against 226,000 tons during the same period last year. The weekly rate of home consumption during the first quarter amounted to 10,432,000 tons as compared with 10,782,000 tons in the previous quarter. In comparison with the same period last year the rate of home consumption plus exports shows a decrease of 883,000 tons, a decline of 7.7 per cent. In addition to the stocks in the hands of consumers, there was 3,976,910 tons of bituminous coal on hand on the docks of Lake Superior and Lake Michigan on April 1, as compared with 8,026,065 tons on January 1. Stocks of anthracite in retail yards on April 1 show the usual seasonal decline,

being 29 per cent less than the amount on hand three months ago. They are, however, somewhat higher than on the corresponding date of last year.

### Larger Expenditures for Missouri River Urged

An amendment to the rivers and harbors bill now pending in the Senate to increase the proposed authorization for improvement of the Missouri river was advocated by representatives of the Missouri river territory at a hearing before the Senate commerce committee on May 13. The 1927 bill authorized expenditures not to exceed \$12,000,000 on the work of deepening of the river but only \$1,800,000 has so far been expended and the bill as passed by the House authorizes not to exceed \$15,000,000 including the unexpended balance of the original authorization. George J. Miller, executive secretary of the Missouri River Navigation Association, urged a specific additional authorization of \$15,000,000 to be available for the next three years. C. E. Childe, manager of the transportation department of the Omaha Chamber of Commerce, told the committee that large savings in freight rates could be effected by improvement of the river.

### Pennsylvania Passenger Trains to Brooklyn Dock

The Pennsylvania has this week run a passenger train through from the west to the pier of the North German Lloyd Line in Brooklyn, N. Y., to deliver at that point passengers who were to sail on the Europa of the North German Lloyd Line; and it is announced that service of this character is to be kept up throughout the summer. The trains enter upon the tracks of the Long Island road at Sunnyside and for a short distance, at the dock, they use the government-owned tracks, the War Department having granted a special permit for this service.

This boat-train service includes the operation of through cars from Chicago, St. Louis, Cleveland, Detroit, Toledo, Memphis, Knoxville, Louisville and Cincinnati into Pittsburgh; and at Pittsburgh all are consolidated into a special train for the remainder of the trip. Later sailings of the North German Lloyd Line, in connection with which special train service is to be provided, are May 20, and 29; June 2, 10, 17, 23, 27; July 4, 15, 16 and 23; August 1.

### Proposed Commission to Study Express Motorways

The Senate on May 7 passed a joint resolution providing for the creation of the United States Motorways Commission to study proposals for the establishment of a national system of express motorways, with a view to making recommendations to Congress with respect to the establishment and maintenance of such a system. Senator Phipps, of Colorado, explained that the purpose is to point out to those interested, whether it be the states, the federal government or private enterprises, that a definite plan should be formulated with a view to

avoiding the loss which would occur if such a system were to be developed in a haphazard manner. He said there had been a number of individual proposals for the establishment of such highways as toll roads. The commission is to be composed of two Senators, two Representatives, and eight individuals to be appointed by the President, representing the various government departments and the Interstate Commerce Commission and including one not connected with the government who is experienced in industrial, military, aviation and traffic problems.

### Illinois Central and Luckenbach Line

The Interstate Commerce Commission has issued an order directing the Illinois Central to remove the undue prejudice found to exist in its refusal to establish through routes and joint rail-water rates via New Orleans with the Luckenbach Gulf Steamship Company on certain commodities from points on its line to California ports while contemporaneously maintaining through routes and joint rates with the Redwood Line. The railroad company is required to establish the same rates and the same terminal provisions and divisions as is accorded the Redwood Line. The joint rates were established on May 31, 1928, and prior to that date, according to the report, the Luckenbach Steamship Company was invited to join in the establishment of the rates. It declined but later organized a subsidiary which immediately requested that it be shown as a party to the joint rates and this time the railroad declined, after which the complaint was filed. The report says, however, that upon the record the commission was not convinced that the maintenance of joint rail-water rates is desirable in the public interest and that its findings are confined to the issue of undue prejudice only.

### Latest Development in Chicago-Pacific Coast Schedules

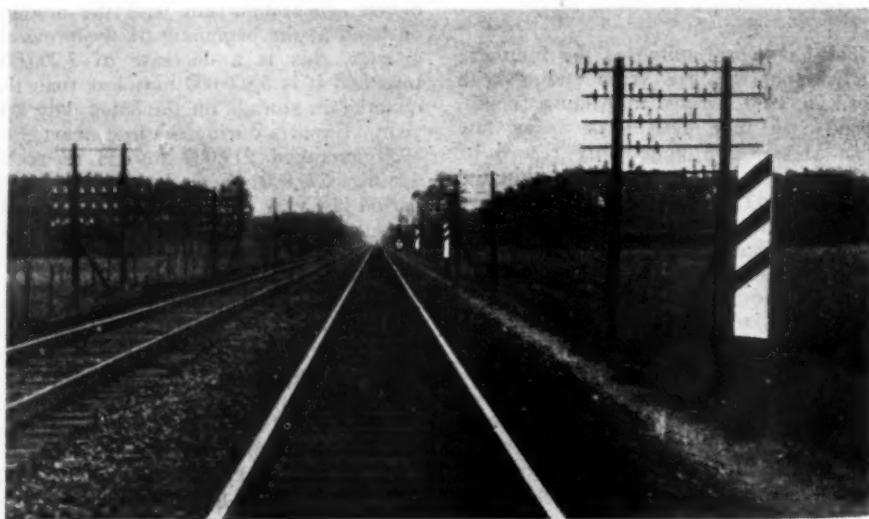
At the present time, the railroads involved in the Chicago-Pacific Coast time war are agreed that the fastest passenger schedule from Chicago to the Northwest Pacific Coast shall be 60 hr. and 45 min., a reduction of one hour, and eastbound, 60 hr. and 45 min., a reduction of 30 min., while the fastest schedule from Chicago to California shall be 56 hr., a reduction of 2 hours, and eastbound 57 hr., a reduction of 50 min., beginning June 1. At the same time, they have agreed on a 9 hr. 50 min. schedule between Chicago and the Twin Cities, and have discontinued three trains in both directions. The trains to be discontinued include the North American of the Chicago & North Western, the Bat of the Chicago, Milwaukee, St. Paul & Pacific, and the Commercial Limited of the Chicago, Burlington & Quincy. Coincident with these changes, the Northwestern Limited of the Chicago & North Western will be speeded up 1 hr. and 35 min., westbound, and 30 min. eastbound. The train will leave Chicago at 8:30 p.m. instead of 6:30 and will arrive in St. Paul at 7:25 and Minneapolis at

8:00 a.m. and will carry through sleeping cars from Chicago to Duluth, where they will arrive at 12:55 p.m. effective May 18. Likewise, the North Coast Limited of the Burlington will operate on a 9 hr. 50 min. schedule, leaving Chicago at 10:30 p.m. instead of 9:00 p.m., and arriving in St. Paul at 8:20 instead 8:45 a.m.

The major changes in the California trains involve the Chief of the Atchison, Topeka & Santa Fe, which will leave Chicago at 11 a.m. instead of 11:15, and will arrive in Los Angeles at 5 p.m. instead of 7:15. Eastbound the train will leave Los Angeles at 9:35 p.m. instead of 9:45 and will arrive in Chicago at 8:45 a.m. instead of 9:45. The schedule of the California Limited will be reduced 2 hr., the train leaving Chicago at 9:15 p.m. instead of 8:15 and arriving in Los Angeles at 8:15 a.m. instead of 9:15. Returning it will operate on a 61 hr. 15 min. schedule, leaving Los Angeles at 6:00 p.m. and arriving in Chicago at 9:15 a.m.

The Overland Limited of the Chicago & North Western will operate on a 56 hr. instead of a 58 hr. schedule and will leave Chicago at 10:30 a.m. and arrive in San Francisco at 4:30 p.m. Returning, the time will be 57 hr., the train leaving San Francisco at 10:20 p.m. and arriving in Chicago at 9:30 a.m. The San Francisco Limited will operate on a 60 hr. 55 min. schedule eastbound and a 61 hr. 15 min. schedule westbound, while the time of the Los Angeles Limited will be 61 hr. westbound and 61 hr. 15 min. eastbound.

The schedules of the Chicago-Northwest Pacific trains appeared in the *Railway Age* of May 3. The Golden State Limited of the Chicago, Rock Island & Pacific, beginning June 15, will be run on a 61 hr. schedule instead of 63 hr., and will continue to be a non-extra fare train. It will leave Chicago at 9:30 p.m. instead of 8:30 and will arrive in Los Angeles at 8 a.m. instead of 9:30. The eastbound schedule will not be changed. The running time of the Apache will be reduced 1 hr. eastbound and will leave Los Angeles at 11 a.m. instead of 10 a.m. and arrive in Chicago at 7:59 a.m. as at present.



Wayside Landmarks in Germany

## Foreign

### The German Purchasing Agent

The door-keeper at the main entrance to the general offices of the German Railway Company, in Berlin, has before him at all times an electric indicator by which buyers in the upper part of the building—who seem to be numerous—can instantly convey to him the necessary information as to how to deal with callers.

The indicator is a large board divided into small squares, these squares bearing the numbers by which the purchasing agent (or other officer) is known. For each office or officer there are on the board three glasses, a red, a green and a yellow. If the red glass is illuminated, the officer is in his office but cannot see callers; if the green glass is lighted up, he is in and can be seen; if yellow, he is not in his room but is somewhere in the building. If the three glasses are dark, that particular officer is not in the building.

On a green signal, the door-keeper sends the caller's card up by a pneumatic tube.

### Landmarks for the Engineman

Readers who recall the pre-caution roadside signals extensively used in Belgium, France and Holland, as illustrated in the *Railway Age* of September 7, 1929, will be interested in the accompanying picture showing the style in which a similar arrangement is employed on the railroads of Germany. The post at the right in this view is 250 meters (about 820 ft.) in the rear of the distant or caution signal, and the distant signal in Germany usually is 700 meters (2300 ft.) in the rear of the home signal.

This post is 6 ft. 6 in. high, measuring from the top of the rail, and the white surface is 16 in. wide.

In this view there are but three of these landmark posts, but the circular defining the standards for use on the German railroads prescribes five, where found desirable, and all of the posts



(after the first) are to be equally spaced, 75 meters (about 250 ft.). The fourth post would have four diagonal black stripes and the fifth post five stripes.

These are the standard posts for a situation like that shown in the illustration; for a four-track line or wherever the use of this height of post would be inconvenient, the standards include a smaller board, on a shorter post. The small boards are 30 in. square and the black lines are not so wide.

### Rumanian Railways in 1929

According to Department of Commerce reports, the Rumanian government railways operated at a loss of 1,239,340,223 lei (\$7,436,041) during the year 1929. Operating revenues totaled 10,785,323,452 lei (\$64,711,940), a decrease of 104,329,206 lei (\$625,975) from the 1928 revenues of 10,889,652,658 lei, while operating expenses amounted to 12,024,663,675 lei (\$72,147,982) as against 12,492,869,548 lei (\$74,957,217) in 1928. A total of 37,198,828 passengers were carried during 1929, as compared to 39,359,131 passengers carried in 1928. Freight originating in Rumania decreased from 18,118,235 tons in 1928 to 16,981,173 tons in 1929, although the amount of freight received from connections increased from 3,770,824 tons in 1928 to 4,575,518 tons in 1929. Rolling stock in operation at the end of 1929, exclusive of 150 new locomotives and 50 new passenger cars bought during the year, totaled 2,179 locomotives, 3,661 passenger cars, 46,706 freight cars and 8,316 tank cars in operation and 1,447 locomotives, 760 passenger cars, 6,155 freight cars and 985 tank cars under repair.

### Spanish Railway Developments

The Spanish government, by royal decree, has authorized the liquidation of the Spanish railway known as the Compañia de Explotacion de los Ferrocarriles de Madrid a Caceres y a Portugal y del Oeste de Espana, according to Department of Commerce reports. The decree of liquidation placed a valuation of 73,099,691 pesetas (about \$9,576,059) upon the assets of the company and fixed its obligations at 74,145,291 pesetas (about \$9,713,033). Of the liabilities, the government is to cancel for its own account 52,187,683 pesetas (\$6,836,586). Following liquidation, the lines of this company will be merged with those of eight other small railways, all in poor financial condition, to form one company, called the Ferrocarriles del Oeste de Espana (Western of Spain), which will be operated by the Ferrocarriles de Espana under the supervision of the government.

Commerce reports, based on statements in the Spanish press, also indicate that a consolidation has been proposed for the three largest railway systems in Spain, namely, the Norte de Espana (Northern of Spain), Ferrocarriles de Madrid a Zaragoza y a Alicante (Madrid, Zaragoza & Alicante), and the Ferrocarriles del Oeste (Western).

## Equipment and Supplies

### Locomotives

THE SOUTH BUFFALO is inquiring for two eight-wheel switching locomotives.

THE BANGOR & AROOSTOOK has ordered three locomotives of the 4-8-2 type from the American Locomotive Company. These locomotives will have 22½-in. by 30-in. cylinders and will weigh 309,000 lb. in working order.

THE PEORIA & PEKIN UNION has ordered two 8-wheel switching locomotives from the Baldwin Locomotive Works, the order being placed by the Illinois Central. Inquiry for this equipment was reported in the *Railway Age* of April 5.

THE ELECTRO METALLURGICAL COMPANY OF CANADA, Welland, Ont., has ordered one four-wheel connected tank locomotive from the Montreal Locomotive Works, Ltd., of the American Locomotive Company. This locomotive will have 16-in. by 24-in. cylinders and a total weight in working order of 100,000 lbs.

### Freight Cars

THE ILLINOIS STEEL COMPANY is inquiring for five flat cars of 100 tons capacity.

THE UNITED FRUIT COMPANY is inquiring for 25 flat cars and 15 fruit cars.

THE GULF REFINING COMPANY is inquiring for 250 tank cars of 40 tons capacity.

THE MINNEAPOLIS & ST. LOUIS has decided to withhold the purchase of 500 box cars, inquiry for which was reported in the *Railway Age* of April 12.

### Passenger Cars

THE ERIE is inquiring for three mail and express cars 70 ft. long.

THE NORTHWESTERN PACIFIC has ordered seven interurban cars and two trailers from the St. Louis Car Company.

THE NEW YORK, NEW HAVEN & HARTFORD has ordered one club car from the Standard Steel Car Company.

THE ILLINOIS CENTRAL is now inquiring for five baggage and express cars, five baggage and mail cars and five horse baggage cars.

THE NEWFOUNDLAND RAILWAY has ordered one dining car and two sleeping cars from the National Steel Car Corporation.

THE LEHIGH VALLEY has ordered from the Osgood Bradley Car Company, two gas-electric rail motor cars and one trailer car. The motor cars will be equipped with Electro-Motive Company's units of 600 hp. each.

THE SOUTHERN PACIFIC has ordered one lounge car and three observation

cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of March 29.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered two dining cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of January 25.

THE MINNEAPOLIS & ST. LOUIS has ordered four gas-electric rail motor cars from the St. Louis Car Company, the power plants to be furnished by the Electro-Motive Company. Inquiry for this equipment was reported in the *Railway Age* of April 12.

### Iron and Steel

THE VIRGINIAN has ordered 225 tons of steel for a bridge from the Virginia Bridge & Iron Company.

THE BALTIMORE & OHIO has ordered 900 tons of steel for an extension to its terminal building at Baltimore, Md., from Dietrich Brothers.

THE ATCHISON, TOPEKA & SANTA FE has ordered 7,000 tons of structural steel for its 1930 bridge requirements from the American Bridge Company.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has ordered 450 tons of structural steel for a paint shop at Indianapolis, Ind., from the McClintic-Marshall Company.

### Machinery and Tools

THE CHICAGO & NORTH WESTERN is inquiring for one 75-ton bushing press and one car wheel lathe.

### Signaling

THE INTERBOROUGH RAPID TRANSIT COMPANY, New York City, has ordered from the Union Switch & Signal Company 150 color-light signals, 510 relays and other apparatus including automatic stop releases for use in the installation of a block signal system on local tracks. This material is to be used on the Pelham line and the line to 241st street.

### Miscellaneous

THE CANADIAN PACIFIC is constructing an eight-car ferry boat at its Rosebery, B. C., shipyard for service on Slocan Lake during the coming summer.

THE CANADIAN NATIONAL has contracted with the Manitowoc Shipbuilding Corporation, Manitowoc, Wis., for the construction of a steel car ferry, 360 ft. long, 56 ft. beam, and 21 ft. 6 in. deep. This vessel will be a duplicate of the "Grand Rapids."

## Supply Trade

The Detroit Graphite Company has removed its Chicago sales office to 20 North Wacker drive.

The Electro-Motive Company has moved its office from the B. F. Keith building to its new office building, 2160 West 106th street, Cleveland, Ohio.

Marshall D. Raymond has been appointed sales representative of the American Locomotive Company and the Railway Steel-Spring Company, with headquarters at St. Louis, Mo.

E. H. Bollenbacher, 725 Forsyth building, Atlanta, Ga., has been appointed sales representative, in the Atlanta district, of the Pennsylvania Pump & Compressor Company, Easton, Pa.

E. D. Cowlin, formerly manager of the New York office of The Reliance Manufacturing Company, Massillon, Ohio, has been appointed general sales manager with headquarters at Massillon.

John A. Roche, who has resigned as manager of sales of the Maintenance Equipment Company, Chicago, has entered business as a manufacturer's agent, with offices in the McCormick building, Chicago, and is sales representative for the Prendergast Company, Marion, Ohio, and the Stanley H. Smith Company, Cleveland.

C. L. Newby, assistant manager at Chicago of the western division of the Hyatt Roller Bearing Company, Newark, N. J., has been appointed manager of the western division with headquarters at Chicago. Mr. Newby has been associated with the Hyatt company since 1918 as sales manager on general industrial, oil field, railroad and farm machinery applications.

The Union Carbide & Carbon Corporation has consolidated the Kansas City offices of its various units in its new building at 910 Baltimore avenue, Kansas City, Mo. The units in the new building include: The Linde Air Products Company, Presto-O-Lite Company, Inc., Oxweld Acetylene Company, Union Carbide Sales Company, The J. B. Colt Company and National Carbon Company, Inc.

Fairbanks, Morse & Company, Chicago, will celebrate the invention of the modern platform scale at St. Johnsbury, Vt., on July 4 to 6. The celebration, which pays tribute to Thaddeus Fairbanks, who invented the scale in 1830, has the sponsorship of the Vermont Historical Society, the New England Advisory Council and the Chamber of Commerce, and will have former President and Mrs. Calvin Coolidge as guests of honor. The principal feature of the program will be an historical pageant depicting the progress during the last

century in the evolution of the modern weighing machine and its influence upon human welfare and world commerce. There will also be an exhibition of original patent models of scales invented by Fairbanks, these being borrowed for the occasion from the patent office.

Major L. Alfred Jenny, civil engineer and a specialist in general engineering and allied fields, has become associated with Eppler, Botz & Sangster, New York, accountants and engineers. Major Jenny has had 25 years experience with engineering problems including 11 years of association with the New York Central on many types of railroad construction. He also served on General Pershing's staff as advisor to the chief of engineers on railroad matters in France, and later was designing engineer in charge of planning port and railroad facilities for the American Expeditionary Forces. In 1918 he had charge of the reconstruction of the railroads at the front; for his work with the American Expeditionary Forces he received several American and foreign citations and decorations. After the war he was engaged in dry dock construction work and since 1924 he has been a consulting engineer.

The Southern Manganese Steel Company, which has been operated as a subsidiary of the American Manganese Steel Company, Chicago Heights, Ill., has now become a part of the parent company and will be operated as the Southern Manganese Steel Division. An office has been opened in the Law and Finance building, Pittsburgh, Pa., in charge of W. G. Hoffman who will handle the sale of both manganese steel castings and heat and corrosion resisting castings. The Southern Manganese Steel Company was formerly represented in the Pittsburgh and Wheeling districts by the Brooke L. Jarrett Company and the American Manganese Steel Company by C. E. Wallander. John H. Coghlan has been appointed direct representative in the New England states for the sale of manganese steel castings, with headquarters at 92 Broadway, Cambridge, Mass., to succeed Harrington, Robinson & Company, South Boston.

W. E. Collier, formerly district sales manager for the Republic Iron & Steel Company, has been appointed district sales manager of the Republic Steel Corporation, with headquarters at Cleveland. S. L. Gibbons, formerly sales manager for the Central Alloy Steel Corporation, has been appointed assistant district sales manager of the Republic Steel Corporation, with headquarters at Cleveland. W. H. Oliver, formerly district sales manager for the Republic Iron & Steel Company, has been appointed district sales manager for the new corporation. T. B. Davies, former sales manager of the Central Alloy Steel Corporation, with head-

quarters at Syracuse, N. Y., has been appointed district sales manager, with headquarters at Buffalo. R. V. Jones, formerly district sales manager of Republic, has been appointed district sales manager at Buffalo. William Vosmer, formerly vice-president in charge of sales of the Donner Steel Company, has been appointed sales manager of the bar division of the Republic Steel Corporation, with headquarters at Youngstown, Ohio. L. D. Mercer, formerly in charge of the sheet sales of the Central Alloy Steel Company, has been appointed sales manager of the sheet division.

G. LaRue Masters, sales manager of the National Lock Washer Company, Newark, N. J., has been elected vice-president in charge of sales of the company. Mr. Masters was born at Philadelphia, Pa., and was educated in the schools of East Orange, N. J. He entered the employ of the National Lock Washer Company in 1919 and was en-



G. LaRue Masters

gaged in sales work in its car window equipment department in the east until July, 1926, when he was placed in charge of the sales of this department for the entire United States and Canada under the direction of the late J. Howard Horn, general sales manager of the company. In 1927 Mr. Masters was promoted to assistant sales manager and since 1929 has served as sales manager.

## Obituary

W. A. Libkeman, manager of sales of the western district of the Standard Steel Car Company, with headquarters at Chicago, died on May 13 following a heart attack.

James E. Sague, former member of the New York State Public Service Commission, died at his home in Poughkeepsie, N. Y., on May 9, at the age of sixty-seven. Mr. Sague was mechanical engineer of the Schenectady Locomotive Works from 1892 to 1901, and later was first vice-president of the American Locomotive Works. His service as Public Service Commissioner was from 1907 to 1914.



## Construction

**BEAVER, MEADE & ENGLEWOOD.**—This company received bids until May 28 for the construction of an extension of its line west from Hough, Okla., about 40 miles.

**BOSTON & MAINE.**—The low bid of \$100,233 submitted by the Dalton-Millimet Company, New York, for the elimination of the Valley Falls-Johnsonville county highway and West street grade crossings of this company's tracks near Johnsonville, N. Y., has been approved by the New York Public Service Commission.

**CANADIAN PACIFIC.**—This company has awarded contracts for the construction of about 90 miles of branch lines in Saskatchewan and Alberta. The projects and the contractors are as follows: At Choice-land, Sask., on the Tuffnel-Prince Albert line to F. Mannix, Calgary, Alta.; at Rockglen, Sask., to Foley Brothers, Winnipeg, Man.; at Leduc, Alta. and Thorsby to the Campbell Construction Company, Calgary; at Sonningdale, Sask., to Roosa & Wickstrand, Winnipeg.

**CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.**—A contract for the construction of a freight warehouse and office building at Janesville, Wis., has been let to the Worden Allen Company, Milwaukee, Wis.

**CHICAGO, SOUTH SHORE & SOUTH BEND.**—A contract for the construction of a one-story repair shop, with dimensions of 100 ft. by 200 ft., and an office unit, with dimensions of 35 ft. by 100 ft., at Michigan City, Ind., has been let to P. H. Lorenz, Moline, Ill. The cost of the improvement is estimated at \$70,000.

**CINCINNATI UNION TERMINAL.**—A contract for the laying of 55 miles of yard tracks at Cincinnati, Ohio, has been awarded to the C. G. Kershaw Contracting Company, Birmingham, Ala.

**DAYTON & UNION.**—A contract for the erection of the steel for the grade separation structures in the track elevation project of this company at Dayton, Ohio, has been awarded to the American Bridge Company, Pittsburgh, Pa., at a cost of about \$430,000. This portion of the work involves the erection of about 8,000 tons of steel.

**GULF, COLORADO & SANTA FE.**—This company plans the construction of an 11-story addition to its general office building at Galveston, Tex.

**LEHIGH VALLEY.**—Plans and an estimate of cost totaling \$113,000 for the elimination of the Decker crossing of this company's tracks in Cayuta, N. Y., have been approved by the Public Service Commission of New York.

**MISSOURI-KANSAS-TEXAS.**—This company has made application to the Missouri Public Service Commission for permission to construct a new bridge over the Missouri river at Boonville, Mo.

**MISSOURI PACIFIC.**—The City of St. Louis (Mo.) has submitted a plan to this railroad for the elimination of the grade crossing at Kings Highway boulevard, Shaw boulevard, De Tonty street and McRee avenue on its Oak Hill branch in that city. It is proposed that an overhead structure be constructed to carry Kings Highway boulevard over the tracks, that the crossings on the other three streets be closed and that an overhead structure be constructed to carry Lafayette avenue over the tracks. The total cost of the project is estimated at \$1,200,000, of which the railroad would pay about two-thirds.

**NATIONAL OF MEXICO.**—Engineers of this railroad have completed the location surveys for the construction of a railroad from a terminus of the National of Mexico at El Salto, Dgo., to Mazatlan, Sin., on the Pacific ocean and the Southern Pacific of Mexico, 156 miles. It is estimated that the cost of construction of this line, which would traverse a mountainous section, would be about \$16,500,000. The Mexican government also plans the construction of an extension from Tepehuanes, Dgo., to a connection with the Southern Pacific of Mexico at Culiacan, Sin., about 110 miles.

**PITTSBURGH & WEST VIRGINIA.**—A contract for the erection of the superstructure of a single-track steel and concrete bridge over the Youghiogheny river at Jacob's Creek, Pa., has been awarded to the American Bridge Company, Pittsburgh, Pa. The new bridge, one of the most important engineering projects on the Pittsburgh & West Virginia's Connellsville extension, will cost approximately \$300,000 and is to be completed within six months. Spanning both the river and Jacob's creek, it will be about 1,500 ft. long and will stand 160 ft. above the normal water level of the river. The steel superstructure will rest on concrete piers, now being constructed under a separate contract with the Vang Construction Company.

**SOUTHERN PACIFIC.**—A contract has been awarded for the construction of a 5.8-mile extension to the Sandia branch from Sandia, Cal., to Holtville, which it is estimated will involve an expenditure of \$195,000. Contracts have also been awarded recently by this company for the following construction projects: An addition to the freight station at Tucson, Ariz.; erection of the superstructure of a viaduct at Goodyear, Cal., incidental to the construction of the Suisun Bay bridge; grading for a change of main line between Canby, Ore., and New Era, construction of a rock-fill type dam on Bonito creek, near Capitan, N. M. The cost of the construction of the dam, which will be about 80 ft. high, 450 ft. thick and will impound about 1,000 acre-feet of water, will be approximately \$500,000. The reservoir so formed will provide a permanent water supply for the railroad and a number of cities in southeastern New Mexico at Carrizozo, Luna, Gallinas, Pastura, Coyote, Ancho, Corona, Torrance, Duran and Vaughn.

## Financial

**AROOSTOOK VALLEY.**—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue \$1,000,000 of first and refunding mortgage 5½ per cent, series A, bonds, maturing in 1954 to be sold at not less than 94, which will make the average cost to the railroad approximately 5.97 per cent.

**ATCHISON, TOPEKA & SANTA FE.**—*Bonds.*—The Interstate Commerce Commission has authorized the Gulf, Beaumont & Great Northern, to issue a general mortgage 6 per cent gold bond, series B, for \$1,132,000, to be delivered to the parent company at par to enable it to meet a maturity of the Beaumont's.

**ATCHISON, TOPEKA & SANTA FE.**—*Control of Oilfields & Santa Fe.*—The Interstate Commerce Commission has authorized this company to acquire control by lease of the Oil Fields & Santa Fe, extending from a connection with the parent company at Cushing, Okla., to Frey and Jennings, 28.4 miles.

**CANADIAN PACIFIC.**—*Annual Meeting.*—No widespread or general depression exists in Canada, though several factors, notably the failure to market our grain and the loss in buying power resulting therefrom, have contributed to a slowing up of traffic, declared E. W. Beatty, chairman and president of the Canadian Pacific, addressing the shareholders at the 49th annual meeting in Montreal last week. There is nothing of a fundamental character which should prevent the return of normal business conditions within the next few months, and, added Mr. Beatty, "we have all been hopeful that the first and perhaps most essential change, both because of its psychological as well as its commercial effect, namely, the free movement of grain out of the country, would be in evidence during this or next month. If this movement begins, I feel reasonably assured that the effect will be a gradual betterment in conditions, and, granted normal crops, the fall business should show an improvement over that of last year." The meeting approved of an amendment to the by-law relating to directors whereby the number of directors is increased from 17 to 18, and on motion of Mr. Beatty, seconded by Col. F. S. Meighen, Robert S. McLaughlin, president of the General Motors of Canada, Oshawa, was elected director, his term to be for two years. A number of resolutions were read by Ernest Alexander, secretary, and approved. The first provided for the approval of the agreement made for the joint control with the Canadian National of the Alberta government railways through the Northern Alberta Railways Company, and authorizing the directors of the C.P.R. to issue consolidated debenture stock for the purpose of acquiring one-half of the bonds of that operating company.

(Continued on page 1215)

# Annual Reports

## Annual Report of the Minneapolis, St. Paul & Sault Ste. Marie Railway Co.

### Wisconsin Central Railway Company

For the fiscal year ended December 31, 1929.

To the Stockholders:

Submitted herewith is a report for the fiscal year ended December 31, 1929.

The Gross Earnings, Operating Expenses, Fixed Charges, Surplus, etc., are shown in the following condensed statement:

	Soo Line (Soo District)	Chicago District	System 1929	System 1928
Gross Earnings	\$29,126,086.64	\$19,527,564.44	\$48,653,651.08	\$50,291,653.65
Operating Expenses	20,512,536.21	14,808,681.53	35,321,217.74	36,407,028.78
Net Earnings	\$8,613,550.43	\$4,718,882.91	\$13,332,433.34	\$13,884,624.87
Income from Other Sources	\$1,027,578.42	\$239,354.63	\$1,266,933.05	\$1,099,434.57
Total Income	\$9,641,128.85	\$4,958,237.54	\$14,599,366.39	\$14,984,059.44
Fixed Charges, Taxes, etc.	7,599,103.66	5,075,013.05	12,674,116.71	12,886,373.18

Addition to Surplus \$2,042,025.19 Dr. \$116,775.51 \$1,925,249.68 \$2,097,686.26

Gross Revenue for the System during 1929 was \$48,653,651.08, a decrease of \$1,638,002.57, or 3.26%, compared with the previous year.

Freight Revenue for the System during 1929 was \$39,751,819.10, a decrease of \$1,721,375.61, or 4.15%.

There were increases and decreases in freight revenue as follows:

Products of Agriculture	\$2,617,847	Dec.
Products of Forests	34,023	Dec.
Less than Carload Freight	193,008	Dec.
Animals and Products	39,230	Dec.
Products of Mines	675,907	Inc.
Manufactures and Miscellaneous	486,825	Inc.

NET DECREASE \$1,721,376

Products of Agriculture decreased due to smaller crops than in the previous year. The total number of bushels of grain moved over the Soo District from August 1, 1928, to December 31, 1928, was 39,513,725, while in the same period of 1929 the number of bushels moved was 21,343,750. The total movement of the 1928 grain crop was 56,194,639 bushels, while the 1929 crop movement is estimated at 40,063,822 bushels, a decrease of 16,130,817 bushels.

Products of Forests decreased, despite an increase in shipments received from connecting lines. There was a decrease in loadings on our line of lumber, pulpwood and logs caused by slackened demand and the depletion of timber now available. This phase of the matter is receiving close attention and we are endeavoring to make available other sources of supply.

Less than Carload Freight decreased due to increased use of automobiles and trucks, increased activities of consolidated carloading companies and less total tonnage of this class of freight in this territory.

Animals and Products decreased due to reduction in movement of cattle, hogs and fresh meats, although there were slight increases in sheep, hides, butter and poultry.

Products of Mines increased due to larger movement of iron ore, bituminous coal and crude petroleum.

Manufactures and Miscellaneous increased, particularly refined petroleum and its products, iron and steel articles, newsprint and canned food products.

Comparison of Cars Loaded on our line and received from connections, and revenue, 1925 to 1929 inclusive, is shown in the statement below:

	(000 Omitted from Revenue)	1925	1926	1927	1928	1929
Products, Agricultural:						
Cars	105,957	82,558	93,947	100,157	80,619	
Revenue	\$9,981	\$6,935	\$8,970	\$10,206	\$7,589	
Products, Animals:						
Cars	36,088	39,925	36,180	35,432	34,114	
Revenue	\$2,619	\$2,907	\$2,659	\$2,594	\$2,554	
Products, Mines:						
Cars	123,866	133,056	139,092	141,548	158,910	
Revenue	\$5,829	\$6,119	\$6,663	\$6,374	\$7,050	
Products, Forests:						
Cars	152,709	141,990	148,599	132,744	129,965	
Revenue	\$6,574	\$6,421	\$6,618	\$6,016	\$5,982	

Miscellaneous:

Cars	120,896	123,000	125,253	136,164	136,390
Revenue	\$9,006	\$9,140	\$9,564	\$11,153	\$11,640
Merchandise:					
Tons	521,423	502,191	503,582	483,520	461,194
Revenue	\$5,410	\$5,223	\$5,237	\$5,130	\$4,937
Grand Total:					
Cars	539,516	520,529	543,071	546,045	539,998
Revenue	\$39,419	\$36,745	\$39,711	\$41,473	\$39,752

There was an increase of 2,799 cars in business received from connecting lines, compared with the previous year.

Passenger Revenue was \$4,633,493.14, a decrease of \$355,408.09, or 7.12%. Interline or through business about equaled that of 1928, but local passenger movements decreased due to increased use of private passenger automobiles and busses, with a further decrease caused by the recession in business in the last three months of 1929.

Revenue from Milk and Cream handled in baggage cars was \$494,775.43, a decrease of \$9,682.12. Of this decrease \$8,773.74 was on the Soo District and \$908.38 on the Chicago District. The decrease on the Soo District was due to the establishment of additional local creameries and large concentrating plants to which local truck lines delivered milk and cream formerly shipped in baggage cars. In addition to the movement of milk and cream in baggage cars, the Chicago District handled milk in tank cars producing freight revenue of \$114,210.00 as compared with \$151,696.37 during the previous year. This decrease was caused by increased production of milk in the territory near Chicago which is served by trucks, and by changes in practice of plants in Wisconsin, which are shipping more cream and less milk.

The Department of Agricultural Development actively continued its educational work in three specially equipped cars. These carried exhibits and demonstrations showing improved methods of seed cleaning and treating, sheep and poultry raising, dairying, potato growing and use of fertilizers. During the year, 52,000 people attended these exhibits and demonstrations at various stops along our lines.

Maintenance of Way and Structures expenses decreased \$342,533.45. The treated tie program inaugurated in 1920 resulted in 173,509 fewer tie renewals in 1929 than in the previous year. However, total expense for ties was only reduced by \$12,737.28, because the territory in which treated ties are used has been extended, calling for a larger number of treated ties at a higher unit cost. There were 141,868 more treated ties and 315,377 fewer untreated ties installed than in the previous year. As the treated tie program progresses the savings due to fewer and fewer renewals will increase. There was a decrease of \$261,459.70 in cost of rail because only 24.51 miles of new 100 lb. rail and 26.87 miles of new 90 lb. rail were laid, as compared with 77.6 miles and 36.7 miles respectively in the previous year. The balance of the total decrease was due to the absence of heavy charges made in the previous year for the rearrangement and enlargement of Schiller Park yard.

Maintenance of Equipment expenses increased \$94,349.05. There was a charge to this account of \$168,665.20 ordered by the Interstate Commerce Commission to adjust charges made to capital account in connection with rebuilding cars during the years 1924, 1925, and 1926. Expenses during the year were increased \$164,513.92 on account of various wage increases granted. These increases were partially offset by reductions in forces employed, principally in the passenger car repair shops.

In July, 1929, the construction of three Mountain Type freight locomotives was started at Shoreham Shops by company forces. They were placed in revenue service on January 1, January 20, and February 1, 1930, respectively. This work was accomplished without any increase in our normal forces. It was undertaken in order to stabilize employment for our shop employees and prevent laying them off during a time of year when locomotive repair work is usually light, the lack of such work being accentuated on account of new locomotives purchased within the previous two years.

Transportation Expenses decreased \$908,440.08, or 5.26%. Total freight revenue decreased \$1,721,375.61, or 4.15%, and

[ADVERTISEMENT]



ton miles of revenue freight 164,830,706, or 4.41%. Gross Ton Miles, which represents the transportation effort required to handle the traffic, decreased 469,093,000, or 5.07%, while the average tonnage handled per train increased 42 tons, or 2.82%, which resulted in saving 163,114 train miles, or 2.78%. By reason of decreased fuel cost there was a saving of \$290,222.56. Wage increases granted employees during the year increased expenses \$91,416.46.

**Hire of Equipment.** Net charges to these accounts were \$44,307.36 less than the previous year due to less per diem paid foreign lines for the use of their equipment for handling grain.

**Increases in Pay** in all departments, agreed upon after negotiations at various times, were responsible for payrolls increasing \$256,933.88 in 1929, as compared with 1928.

**Additions and Betterments.** During the year there was expended for additions and betterments to road a net amount of \$987,500.04, and for improvements to railway property at Ashland, Wisconsin, leased from the Northern Pacific Railway Company, a net amount of \$103,271.31. Expenditures for additions and betterments to equipment, including the purchase of 400 box cars and 4 buffet-sunparlor-lounge cars and the construction costs to Dec. 31, 1929, of 3 locomotives, were \$1,344,537.02; equipment retirements, including 16 locomotives and 766 box cars, amounted to \$1,158,353.46; producing a net increase in the equipment investment account of \$186,183.56.

**Funded and Unfunded Debt.** The outstanding indebtedness was decreased during the year a net amount of \$740,507.82, as follows:

<b>Decreases:</b>	
Minneapolis, St. Paul & Sault Ste. Marie Railway Co.:	
First Refunding Mortgage, Series "A"	
Bonds .....	\$ 30,000.00
Equipment Trust Notes .....	1,203,000.00
Equipment Purchase Contracts .....	385,607.82
Wisconsin Central Railway Co.:	
Marshfield & Southeastern Division Mtge.	6,000.00
Total Decrease .....	\$1,624,607.82
<b>Increases:</b>	
Minneapolis, St. Paul & Sault Ste. Marie Railway Co.:	
Equipment Purchase Contracts .....	884,100.00
Net Decrease .....	\$740,507.82

The above equipment purchase contracts aggregating \$884,100.00 were made in the acquisition of 400 box cars.

The future financing of your property has been facilitated by the execution as of July 1, 1929, of a supplement to its First Refunding Mortgage, by the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, to the Guaranty Trust Company of New York, as Trustee. The supplement clarifies the original mortgage in certain respects; contains improved provisions, applicable to future issues, for redemption of bonds prior to maturity and for refunding them at maturity; and facilitates the establishment of a few permanent types of bonds any one of which may be used as conditions dictate.

Three year notes issued by the Wisconsin Central in 1927, aggregating \$7,500,000, guaranteed as to principal and interest by the Soo Line, were payable January 1, 1930. As collateral for these notes, the Wisconsin Central had pledged \$10,000,000 principal amount of its First and Refunding Bonds. The financial situation was such that it was impossible for the Wisconsin Central to reissue its short term notes at any rate that it could afford to pay, and certain tax provisions contained in its First and Refunding Mortgage, made a sale of the pledged bonds to the public undesirable. Under the circumstances, the Soo Line purchased the \$10,000,000 of pledged bonds for \$8,000,000 in cash, with the approval of the Interstate Commerce Commission, enabling the Wisconsin Central to pay its \$7,500,000 notes and to have \$500,000 remaining for other corporate purposes.

Prior to January 1, 1929, the Soo Line had expended out of income or surplus \$4,106,000 for additions and betterments to its property, against which no bonds had been issued.

To reimburse its treasury for the above expenditures in the purchase of the Wisconsin Central bonds and additions and betterments to its own property, the Soo Line issued \$12,106,000.00 of its First Refunding Mortgage Series "B" 5½% Bonds, maturing July 1, 1978, payment of the interest being guaranteed by the Canadian Pacific Railway Company by endorsement on the bonds. The Soo Line then sold \$8,000,000.00 of these bonds as of January 2, 1930, using the proceeds to defray the cost of the Wisconsin Central bonds it had

## GENERAL BALANCE SHEET DECEMBER 31, 1929

ASSETS	
<b>Property Investment:</b>	
Road .....	\$107,478,568.98
Equipment .....	31,190,722.22
	\$138,669,291.20
Less Reserve for Equipment	
Depreciation .....	12,444,061.95
Total .....	\$126,225,229.25
Sinking Funds .....	477.63
Deposits in lieu of Mortgaged Prop. Sold .....	3,788.90
Miscellaneous Physical Property .....	3,055,786.37
Wis. Cent. Ry. Co., Preferred Stock .....	11,249,500.00
(Pledged for M., St. P. & S. S. M. Ry. Co., 4% Leased Line Certificates)	
<b>Investments in Proprietary, Affiliated, and Controlled Companies:</b>	
Stocks .....	\$ 12,381,904.47
W. C. Ry. Co. Equipment Contracts .....	2,542,311.05
W. C. Ry. Co. Advances .....	3,483,386.00
Other Advances .....	3,565,461.99
Total .....	21,973,063.51
<b>Other Investments:</b>	
Stocks .....	\$ 1.00
Bonds .....	1,956,200.00
Notes .....	682,014.56
Advances .....	18,546.94
Total .....	2,656,762.50
<b>Current Assets:</b>	
Cash .....	\$ 2,768,991.27
Time Drafts and Deposits .....	898,016.21
Special Deposits .....	1,661,413.04
Loans and Bills Receivable .....	60.44
Traffic and Car Service Balances .....	461,572.36
Agents and Conductors Balances .....	648,271.38
Miscellaneous Accounts Receivable .....	678,284.11
Material and Supplies .....	3,835,104.99
Interest and Dividends Receivable .....	52,660.75
Other Current Assets .....	73,243.48
Total .....	11,077,618.03
<b>Deferred Assets:</b>	
Working Fund Advances .....	\$ 42,123.93
Other Deferred Assets .....	332,248.98
Total .....	374,372.91
<b>Unadjusted Debits:</b>	
Rents and Insurance Paid in Advance .....	\$ 34,106.11
Discount on Funded Debt .....	435,447.28
Other Unadjusted Debits .....	915,095.55
Total .....	1,384,648.94
<b>Grand Total .....</b>	<b>\$178,001,248.04</b>

LIABILITIES	
<b>Capital Stock:</b>	
Common .....	\$ 25,206,800.00
Preferred .....	12,603,400.00
Total .....	\$ 37,810,200.00
<b>Governmental Grants:</b>	
Grants in Aid of Construction .....	3,224.89
<b>Funded Debt Unmatured .....</b>	<b>95,077,200.00</b>
M., St. P. & S. S. M. Ry. Co. 4% Leased Line Certificates .....	11,249,500.00
(Issued in exchange for Preferred Stock of Wis. Central Ry. Co., held by Trustee.)	
<b>Non-negotiable Debt to Affiliated Companies</b>	
<b>Current Liabilities:</b>	
Traffic and Car Service Balances .....	\$ 547,164.67
Audited Vouchers and Wages Payable .....	2,292,134.15
Miscellaneous Accounts Payable .....	136,598.85
Interest Matured Unpaid .....	1,659,707.45
Unmatured Interest Accrued .....	452,374.68
Unmatured Rents Accrued .....	6,816.13
Other Current Liabilities .....	169,029.60
Total .....	5,263,825.53
<b>Deferred Liabilities:</b>	
Equipment Purchase Contracts .....	\$ 1,269,702.78
Other Deferred Liabilities .....	16,129.06
Total .....	1,285,831.84
<b>Unadjusted Credits:</b>	
Tax Liability .....	\$ 1,406,370.39
Premium on Funded Debt .....	1,156.69
Insurance and Casualty Reserves .....	143,982.11
Other Unadjusted Credits .....	1,835,431.70
Total .....	3,386,940.89
<b>Corporate Surplus:</b>	
Additions to Property thru Income and Surplus .....	\$ 250,886.01
Funded Debt Retired thru Income and Surplus .....	198,000.00
Sinking Fund Reserves .....	477.63
Profit and Loss—Credit Balance .....	21,943,688.75
Total .....	22,393,052.39
<b>Grand Total .....</b>	<b>\$178,001,248.04</b>

purchased. It placed the remaining \$4,106,000.00 of the new Soo bonds in its treasury for future use.

**Cuyuna Range Ore Traffic.** Effective April 15, 1929, pursuant to authority received from the Interstate Commerce Commission, this company made a ninety-nine year pooling contract with the Northern Pacific Railway Company for

dividing on agreed percentages the iron ore and coal traffic previously handled separately by the two companies between the Cuyuna Range and their docks at Superior, Wisconsin. Under this arrangement each company hauls its percentage of this traffic with its own power at its own expense and collects and retains the revenues thus earned by it. Ore cars are pooled and used indiscriminately, each company furnishing its agreed percentage of them. The Soo Line no longer uses its own tracks from the range east to its main line at Lawler for the movement of this tonnage, using instead the Northern Pacific tracks between the range and McGregor on the Soo main line. The Soo track from Lawler west continues to be used as far as East Lake for other kinds of traffic, but from East Lake west to the range, a distance of 32.31 miles, it has been abandoned, thus doing away with that amount of duplicate mileage.

Under this pooling arrangement, the yards and tracks of the two companies on the range are jointly used and owned. Both companies use the yards and modern concrete ore dock of the Northern Pacific at Superior. The Soo Line has thus avoided expending about \$2,500,000 for a new ore dock at that place, which would have been required prior to the ore season of 1931 to replace its own antiquated dock. Appropriate charges and adjustments are made for the use by one company of the other's facilities. The Soo Line will accomplish very substantial savings each year through this arrangement. It is expected to result in greatly improved service to the mines.

**Ashland Terminals.** Negotiations entered into with the Northern Pacific Railway Company have resulted in consolidating the freight and passenger stations, yard operations and

car and locomotive departments of the two railroads at Ashland, Wisconsin. As a result of this consolidation there have been constructed a modern five-stall engine house, a new coal-plant, a mechanical cinder conveyor, a machine shop and other needed buildings, and other facilities have been rearranged, all for the mutual benefit of both companies.

**General.** The results for the year were disappointing. Up to the First of September the earnings were good; but the grain crop was not equal to that of 1928 and the movement of this crop to market was very much retarded by congestion at the terminals and the advice given by the Federal Farm Board to farmers to withhold their grain from the market. This resulted in a loss in our grain earnings of \$2,360,000. In addition, the severe break in the latter part of October in the security market at once slowed down the movement of general merchandise.

Our property has been well maintained. We purchased additional equipment during the year, and for the first time in the history of our Road we authorized our Shoreham shops to construct three Mountain Type locomotives, which are now in successful operation.

Business conditions as a whole throughout this territory are fair, but the slump in the prices of farm products and the uncertainty as to future grain prices are tending toward holding back an improvement in the farming situation.

Our financial position is strong, as our statements indicate.

Respectfully submitted,

C. T. JAFFRAY,  
President.

## Colorado & Southern Ry. Co.—Thirty-first Annual Report

Chicago, January 2, 1930.

TO THE STOCKHOLDERS OF THE COLORADO AND SOUTHERN RAILWAY COMPANY:

Herewith is submitted the Thirty-first Annual Report of your Board of Directors for the year ended December 31, 1929, setting forth composite income statement and statistics of operation for Colorado and Southern Lines included in this report. Balance sheets, income account and other statements of the several companies comprising the Colorado and Southern Lines are shown separately in the report of the Comptroller.

### Comparative Statement of Income—Years Ended December 31

Percent of Ry. Oper.	1929	RAILWAY OPERATING REVENUES	1928	Percent of Ry. Oper.
Rev.				Rev.
80.95	\$21,141,164.20	Freight	\$20,408,781.82	79.54
11.32	2,957,505.06	Passenger	3,293,730.66	12.84
2.28	594,910.72	Mail	500,484.93	1.95
2.14	558,796.84	Express	558,468.39	2.18
2.13	555,342.69	All other transportation	577,014.02	2.25
.93	243,234.55	Incidental	246,578.80	.96
.25	65,248.76	Joint facility	72,676.09	.28
100.00	\$26,116,202.82	Total railway operating revenues	\$25,657,734.71	100.00
		RAILWAY OPERATING EXPENSES		
		Maintenance of way and		
14.82	\$3,871,066.74	structures	\$3,780,995.29	14.74
16.80	4,387,486.68	Maintenance of equipment	4,096,138.36	15.96
1.73	450,458.02	Traffic	429,719.38	1.67
31.50	8,226,628.92	Transportation	8,078,803.28	31.49
.60	157,624.38	Miscellaneous operations	171,687.54	.67
3.83	1,000,654.23	General	984,470.91	3.84
Cr. .31	Cr. 82,342.72	Transportation for investment—		
		Credit	Cr. 130,092.89	Cr. .51
68.97	\$18,011,576.75	Total railway operating expenses	\$17,411,721.87	67.86
		Net revenue from railway		
31.03	\$8,104,626.07	operations	\$8,246,012.84	32.14
		Railway tax accruals	\$1,660,055.74	
	\$1,744,114.40	Uncollectible railway revenue	5,539.88	
		Railway operating income	\$6,580,417.22	
	\$6,352,438.47	Hire of equipment—Net	Dr. 411,089.77	
	Dr. 615,128.77	Joint facility rents—Net	Dr. 171,757.40	
	Dr. 175,321.62	Net railway operating income	\$5,997,570.05	
		OTHER NON-OPERATING INCOME		
		Miscellaneous rent income	\$93,388.14	
		Dividends and miscellaneous		
		interest	531,462.30	
Rev.	1929		1928	Rev.
	5,470.61	Miscellaneous income	4,036.66	
		Total other non-operating		
	\$393,547.46	income	\$628,887.10	

Percent of Ry. Oper.		Percent of Ry. Oper.
.....	\$5,955,535.54..... Gross income .....	\$6,626,457.15 .....
	OTHER DEDUCTIONS FROM GROSS INCOME	
.....	\$3,700.54..... Miscellaneous rents .....	\$3,613.82 .....
.....	2,361,752.83..... Interest on funded debt.....	2,370,562.50 .....
.....	2,064.42..... Interest on unfunded debt...	4,623.96 .....
	Amortization of discount on	
.....	30,812.43..... funded debt .....	31,115.78 .....
.....	12,136.40..... Miscellaneous income charges.	12,513.42 .....
	Total other deductions from	
.....	\$2,410,466.62..... gross income .....	\$2,422,429.48 .....
.....	\$3,545,068.92..... Net income .....	\$4,204,027.67 .....
	DISPOSITION OF NET INCOME	
.....	\$1,610,602.92..... Dividends .....	\$1,610,872.20 .....
	Income balance transferred to	
.....	\$1,934,466.00..... profit and loss.....	\$2,593,155.47 .....

### General Operations

#### Revenues:

Total Operating Revenues for 1929	\$26,116,202.82
Total Operating Revenues for 1928	25,657,734.71

Increase ..... \$458,468.11—1.79%

This increase is made up as follows:

Freight	Increased	\$732,382.38—3.59%
Passenger	Decreased	336,225.60—10.21%
Mail	Increased	94,425.79—18.87%
Express	Increased	328.45—0.06%
Switching	Increased	22,358.03—5.31%
Other Transportation Revenues	Decreased	44,029.36—28.29%
Incidental Operating Revenues	Decreased	10,771.58—3.37%

Net Increase ..... \$458,468.11—1.79%

A comparison of tonnage by commodities with 1928 shows a net increase as follows:

Products of Agriculture	Increased	255,142 tons—15.95%
Animals and Products	Decreased	36,054 tons—11.74%
Products of Mines	Increased	483,875 tons—13.08%
Products of Forests	Decreased	29,039 tons—7.37%
Manufactures and Miscellaneous	Increased	48,177 tons—2.35%
Less-than-carload tonnage	Decreased	10,412 tons—7.50%

Total Tonnage ..... Increased 711,689 tons—8.69%

A comparison of carloads shows:

Total cars (all commodities) in 1929	273,034 cars
Total cars (all commodities) in 1928	262,545 cars

Increase in 1929 ..... 10,489 cars—4.00%

The substantial increase in freight revenue, as shown in foregoing table, was due to large increases in tonnage of Products of Agriculture and of Mines, especially on The Fort Worth and

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Denver City Railway. Grain loadings on that line for the year 1929 increased 5,226 cars or 114% over 1928, owing to a favorable crop year and a bumper wheat crop in the Texas Panhandle and to new tonnage from the recently completed South Plains Railway.

Products of Mines tonnage on the Fort Worth and Denver road increased 407,614 tons or 46.71%, owing to extensive highway construction activities, which caused a heavy movement in crushed stone and an increase in gravel and sand shipments of 278,215 tons or 78.3% as the result of the opening of new gravel and sand pits on the South Plains Ry. This class of shipments also showed a substantial increase in tonnage on the Wichita Valley Lines. Crude petroleum shipments from the Panhandle fields increased 4,568 tons.

#### Operating Statistics

Tons of revenue freight carried—1929.....	8,898,008	
Tons of revenue freight carried—1928.....	8,186,319	
Increase .....	711,689	8.69%
Revenue tons one mile—1929.....	1,709,142,353	
Revenue tons one mile—1928.....	1,565,759,882	
Increase .....	143,382,471	9.16%
Revenue tons per train mile—1929.....	600.84	
Revenue tons per train mile—1928.....	592.35	
Increase .....	8.49	1.43%
Revenue tons per loaded car—1929.....	25.31	
Revenue tons per loaded car—1928.....	24.23	
Increase .....	1.08	4.46%
Revenue passengers carried—1929.....	555,184	
Revenue passengers carried—1928.....	643,427	

Decrease .....	88,243	13.71%
Revenue passengers carried one mile—1929.....	91,959,182	
Revenue passengers carried one mile—1928.....	99,827,693	
Decrease .....	7,868,511	7.88%
Average distance carried—revenue passengers—1929.....	165.64	
Average distance carried—revenue passengers—1928.....	155.15	
Increase .....	10.49	6.76%

#### Expenditures (Operating)

Total operating expenses—1929 .....	\$18,011,576.75
Total operating expenses—1928 .....	17,411,721.87
Increase .....	\$599,854.88— 3.45%

The increase in operating expenses was due to an increase in expenditures on The Fort Worth and Denver City Railway of \$694,748.89.

#### Expenditures (Capital)

There was expended during the year 1929, chargeable to Capital Account:

For Road .....	\$1,556,998.20
For Equipment .....	Cr. 332,687.60
For General .....	Cr. 5,749.49
	\$1,218,561.11

The Directors take pleasure in commending the officers and employes of the Company for their competent and effective work, and their loyal co-operation during the year.

By order of the Board of Directors.

FREDERICK E. WILLIAMSON,  
President.

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## Financial News

(Continued from page 1211)

pany. Approval was given to the acquisition of the preferred and common stocks of the Algoma Eastern, par value of three million dollars, at the price of \$110 per share for each class of stock. The meeting approved of the leasing of the Midland Simcoe, which, with running rights held over a section of the Canadian National Railways, gives access from the Georgian Bay and Seaboard Line to industries in the town of Midland. President Beatty in addressing the meeting stated that net railway operating revenues in 1929 were equivalent to but 3.9 per cent on the property investment.

**CHESAPEAKE & OHIO.—Equipment Trust.**—The Bankers Company of New York, Evans, Stillman & Co., and the Continental Illinois Company are offering \$19,800,000 of 4½ per cent equipment trust series of 1930 certificates of this company and \$5,100,000 of a similarly named issue of the Pere Marquette, maturing in installments from 1931 to 1945 and priced to yield from 4 per cent to 4.55 per cent, both issues subject to the approval of the Interstate Commerce Commission.

**CHESAPEAKE & OHIO. — Equipment Trust.**—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of \$19,800,000 of its equipment trust of 1930, 4½ per cent, certificates. The issue will mature in installments from 1931 to 1945 and is authorized for sale to the highest bidder, a syndicate headed by the Bankers Company of New York, at 99.137, which will make the average annual cost to the railroad approximately 4.636 per cent.

**CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—Bonds.**—The Interstate Commerce Commission has authorized this company to issue \$15,000,000 of Chicago, Milwaukee & St. Paul general mortgage 4¾ per cent, series F bonds maturing in 1989 and to sell the issue to Kuhn, Loeb & Co. at 98, making the annual cost to the railroad approximately 4.85 per cent.

**CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—Annual Report.**—In the May 3 issue of *Railway Age*, page 1093, a typographical error was made in reporting figures of this company for the past year. The 1929 annual report of this road shows net income after interest and other charges of \$276,636, as compared with net deficit in 1928 of \$594,595. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average mileage operated .....	1,746.53	1,746.53	.....
RAILWAY OPERATING REVENUES .....	27,218,998	27,063,052	+ 155,946
Maintenance of way.....	4,031,566	4,878,658	— 847,092
Maintenance of equip't.....	4,978,404	5,170,012	— 191,608
Transportation .....	11,451,794	11,408,480	+ 43,314
TOTAL OPERATING EXPENSES.....	22,069,240	22,988,963	— 919,723
Operating ratio .....	81.08	84.95	— 3.87
NET REVENUE FROM OPERATIONS .....	5,149,758	4,074,089	+ 1,075,669
Railway tax accruals ..	1,339,794	1,391,514	— 51,720
Equipment rents—Net .....	424,105	437,333	— 13,229
Joint facility rents—Net .....	414,310	384,203	+ 30,107
NET RAILWAY OPERATING INCOME .....	2,968,733	1,857,815	+ 1,110,918
Non-operating income .....	197,167	187,858	+ 9,309
GROSS INCOME.....	3,165,900	2,045,673	+ 1,120,227

	1929	1928	Increase or decrease
Interest on funded debt .....	2,649,969	2,601,164	+ 48,805
TOTAL DEDUCTIONS FROM GROSS INCOME .....	2,889,264	2,640,268	+ 248,996
NET INCOME.....	276,636	* 594,595	+ 871,231

\* Deficit.

**CHICAGO, ROCK ISLAND & PACIFIC.—Annual Report.**—The 1929 annual report of this company shows net income after interest and other charges of \$14,007,321, as compared with net income in 1928 of \$13,167,696. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average Mileage operated .....	8,110	8,082	+ 28
RAILWAY OPERATING REVENUES .....	147,721,562	141,232,604	+ 6,488,958
Maintenance of way ..	20,250,848	19,173,504	+ 1,077,325
Maintenance of Equipment .....	27,294,256	26,598,095	+ 696,160
Transportation .....	52,145,967	50,233,183	+ 1,912,784
TOTAL OPERATING EXPENSES .....	108,555,385	103,266,340	+ 5,289,045
Operating ratio .....	73.49	73.12	+ .37
NET REVENUE FROM OPERATIONS ..	39,166,177	37,966,264	+ 1,199,914
Railway tax accruals ..	8,212,087	8,379,348	— 167,261
Railway operating income .....	30,921,694	29,513,204	+ 1,408,489
Equipment rents .....	4,867,141	3,921,771	+ 945,370
Joint Facility rents .....	1,205,644	1,324,918	— 119,274
NET RAILWAY OPERATING INCOME ..	24,848,909	24,266,515	+ 582,394
Non-operating income ..	1,282,360	961,921	— 320,439
GROSS INCOME .....	26,131,269	25,228,436	+ 902,833
Rent for leased roads .....	155,203	156,301	— 1,099

	1929	1928	Increase or decrease
NET INCOME	14,007,321	13,167,696	+ 839,625
Disposition of net income:			
Dividends on Preferred Stock	3,567,185	3,567,185	.....
Dividends on Common Stock	5,205,060	4,461,480	+ 743,580
Surplus carried to Profit & Loss	5,235,076	5,139,031	+ 96,045

**DULUTH, MISSABE & NORTHERN.—Annual Report.**—The 1929 annual report of this road shows net income after interest and other charges of \$9,468,511, as compared with net income of \$7,892,954 in 1928. Selected items from the income statement follow:

	1929	1928	Increase or decrease
RAILWAY OPERATING REVENUES	20,606,294	17,417,640	+ 3,188,655
Maintenance of way	1,808,106	1,687,972	+ 120,133
Maintenance of Equipment	2,265,205	2,089,886	+ 175,319
Transportation	3,375,271	3,130,158	+ 245,113
TOTAL OPERATING EXPENSES	7,826,406	7,206,858	+ 619,548
Operating ratio	37.98	41.38	— 3.41
NET REVENUE FROM OPERATIONS	12,779,888	10,210,781	+ 2,569,107
Railway tax accruals	1,872,760	2,206,859	— 334,099
Railway operating income	10,907,128	8,003,918	+ 2,903,210
Equipment rents and Joint Facility rents (Net)	(Dr) 4,007 (Cr) 20,006	—	24,012
NET RAILWAY OPERATING INCOME	10,903,122	8,023,924	+ 2,879,198
GROSS INCOME	11,986,647	8,974,291	+ 3,012,356
Rent for leased roads	206,516	209,109	— 2,594
Interest on funded debt	274,259	310,926	— 36,667
TOTAL DEDUCTIONS FROM GROSS INCOME	2,518,136	1,081,337	+ 1,436,799
NET INCOME	9,468,511	7,892,954	+ 1,575,557

**FORT WORTH & DENVER CITY.—New Director.**—Arthur L. Kramer of Dallas, Tex., has been elected a director to succeed K. M. Van Zandt, deceased.

**GREAT NORTHERN.—Bonds.**—J. P. Morgan & Co., the First National Bank and the National City Company are offering, subject to the approval of the Interstate Commerce Commission, \$20,000,000 of this company's 4½ per cent general mortgage, series E, bonds, maturing in 1977. The issue is priced at 97 to yield 4.65 per cent and is redeemable after 1947 at a 5 per cent premium and after 1957 at a 2½ per cent premium.

**INTERNATIONAL RAILWAYS OF CENTRAL AMERICA.—Annual Report.**—The 1929 annual report of this company shows net income after interest and other charges of \$2,409,504, as compared with net income of \$2,314,135 in 1928. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average Mileage operated	719.44	692.77	+ 26.67

	1929	1928	Increase or decrease
RAILWAY OPERATING REVENUES	7,850,085	7,758,080	+ 92,006
Maintenance of way	1,149,100	1,061,350	+ 87,750
Maintenance of Equipment	941,649	1,008,795	— 67,146
Transportation	1,761,607	1,940,795	— 179,189
NET OPERATING EXPENSES	4,569,746	4,664,340	— 94,594
Operating ratio	58.21	60.12	— 1.91
NET REVENUE FROM OPERATIONS	3,280,340	3,093,740	+ 186,600
Railway tax accruals	232,346	296,229	— 63,883
Railway operating income	3,047,362	2,787,287	+ 260,075
Hire of freight cars—Cr.	9,916	8,447	+ 1,469
Non-operating income	301,654	316,048	— 14,394
GROSS INCOME	3,680,520	3,384,311	+ 296,209
Interest on funded debt	1,150,219	951,915	+ 198,303
TOTAL DEDUCTIONS FROM GROSS INCOME	1,271,016	1,070,176	+ 200,840
NET INCOME	2,409,504	2,314,135	+ 95,369

**LEHIGH & NEW ENGLAND.—Annual Report.**—The annual report of this road for 1929 shows net income after interest and other charges of \$802,350, as compared with net income of \$836,127 in 1928. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average Mileage operated	216.67	216.67	.....
RAILWAY OPERATING REVENUES	5,084,659	5,392,412	— 307,753
Maintenance of way	614,758	644,686	— 29,928
Maintenance of Equipment	1,120,624	1,122,030	— 1,406
Transportation	1,765,097	1,915,359	— 150,262
TOTAL OPERATING EXPENSES	3,770,365	3,955,210	— 184,845
Operating ratio	74.15	73.35	+ .80
NET REVENUE FROM OPERATIONS	1,314,293	1,437,202	— 122,908
Railway tax accruals	72,210	184,851	— 112,641
Railway operating income	1,241,817	1,252,323	— 10,507
Hire of freight cars—Cr.	70,923	82,243	— 11,320
Joint facility rents	134,878	130,668	+ 4,210
Non-operating income	116,401	142,188	— 25,788
GROSS INCOME	1,358,217	1,394,512	— 36,294
Interest on funded debt	385,681	392,431	— 6,750
TOTAL DEDUCTIONS FROM GROSS INCOME	555,867	558,384	— 2,518
NET INCOME	802,350	836,127	— 33,777

**MISSOURI PACIFIC.—Bonds.**—This company has applied to the Interstate Commerce Commission for authority for the authentication and delivery of \$20,750,000 of first and refunding mortgage 5 per cent bonds, to be held in the treasury available for pledge.

**MISSOURI PACIFIC.—Van Sweringens Elect New Directors.**—Eight new directors were elected and nine retiring directors were re-elected to the board of this company at the annual stockholders meeting at St. Louis, Mo., on May 13 by representatives of the Van Sweringens

interests who voted the stock of the Missouri Pacific held by the Alleghany Corporation. Included among the directors who were not re-elected was William H. Williams, who has served as chairman of the board since 1924. The new directors are O. P. Van Sweringen, president of the Alleghany Corporation and the Chesapeake Corporation, John Sherwin, Jr., president of the Midland Bank of Cleveland, O., D. S. Barrett, Jr. of Cleveland, Leonard P. Ayres of Cleveland, H. G. Dalton, of Pickands Mather & Company, Cleveland, G. A. Tomlinson, president of the Tomlinson Fleet, Cleveland, Alva Bradley of Cleveland and W. W. Reilly of Buffalo, N. Y. They replace Mr. Williams, Matthew C. Brush of New York, Archibald R. Graustein of New York, Charles E. Ingersoll of Philadelphia, Pa., H. Hobart Porter of New York, John J. Raskob of New York, Finley J. Shepard of New York and R. Lancaster Williams of Baltimore. The by-laws of the company were amended to allow future meetings of the board of directors and the executive committee to be held at either St. Louis or Cleveland.

**NEW YORK CENTRAL.—Equipment Trust Certificates.**—This company has applied to the Interstate Commerce Commission for authority for an issue of \$3,945,000 of 4½ per cent equipment trust certificates.

**NEW YORK, NEW HAVEN & HARTFORD.—Valuation.**—The Interstate Commerce Commission has denied this company's petition for a reargument, rehearing and reconsideration of the proceedings relating to the valuation of its properties for the purpose of presenting further evidence as to the value of its rights in the New York and Boston terminals.

**PERE MARQUETTE.—Equipment Trust.**—The Interstate Commerce Commission has authorized this company to assume obligation and liability for \$5,100,000 of its 4½ per cent equipment trust of 1930, certificates, to mature in installments from 1931 to 1945 and to sell the issue to the highest bidder, a syndicate headed by the Bankers Company of New York, at 99.137, which will make the average annual cost to the railroads approximately 4.636 per cent.

**READING.—Equipment Trust.**—Edward Lowber Stokes & Co. is offering subject to the approval of the Interstate Commerce Commission \$7,080,000 of this company's 4½ per cent equipment trust series M certificates, maturing in installments from 1930 to 1945 and priced to yield from 4 per cent to 4.40 per cent.

**READING.—Equipment Trust Certificates.**—This company has applied to the Interstate Commerce Commission for authority for an issue of \$7,080,000 of 4½ per cent equipment trust certificates, which have been sold, subject to approval, to Edward Lowber Stokes & Co., at 99.8375.

**ST. LOUIS-SAN FRANCISCO.—New Directors Elected.**—Leonard Dudkins, assistant general counsel of the Frisco at



New York, A. P. Stewart, general attorney of the Frisco at St. Louis, Donaldson Brown, vice-president of the General Motors Corporation, New York, and Charles W. Nichols, president of the Nichols Copper Co., New York, have been elected as members of the board of directors to succeed Benjamin F. Yoakum, deceased, Walter S. Franklin and Robert M. Thompson of New York and Grant R. McCullough of Tulsa, Okla.

**SOUTHERN PACIFIC.—Bonds.**—The Interstate Commerce Commission has authorized this company to issue \$41,294,000 of its Oregon lines first mortgage 4½ per cent, series A, bonds, to be sold to Kuhn, Loeb & Co. at 95, which will make the annual cost to the railroad approximately 4.7677 per cent.

**WABASH.—Proposed Acquisition of W. & L. E.**—The Interstate Commerce Commission has assigned this company's application for authority to acquire control of the Wheeling & Lake Erie for hearing at Washington on June 9, before C. V. Burnside, assistant director of the commission's Bureau of Finance, at the same time as the hearings on the applications of the New York, Chicago & St. Louis and the Pittsburgh & West Virginia for authority to acquire control of the Wheeling.

**WINCHESTER & WARDENSVILLE.—Acquisition and Securities.**—The Interstate Commerce Commission has authorized this company to acquire and operate the line formerly owned by the Winchester & Western and to issue \$134,000 of common stock, \$330,000 of first mortgage 5 per cent bonds and \$332,000 of income mortgage 5 per cent bonds to be delivered in payment for property acquired.

### Dividends Declared

**Alabama Great Southern.**—Common, \$2.00, semi-annually; Common Extra, \$1.50, both payable June 28 to holders of record May 24. Preferred, \$2.00, semi-annually; Preferred Extra, \$1.50, both payable August 15 to holders of record July 11.

**Boston & Maine.**—Common, \$1.00, quarterly; 7 Per Cent Preferred, \$1.75, quarterly; First Preferred A, \$1.25, quarterly; First Preferred B, \$2.00, quarterly; First Preferred C, \$1.75, quarterly; First Preferred D, \$2.50, quarterly; First Preferred E, \$1.12½, quarterly; 6 Per Cent Preferred, \$1.50, quarterly, all payable July 1 to holders of record June 14.

**Canadian Pacific.**—Common, 2½ per cent, quarterly, payable June 30 to holders of record May 29.

**Chicago & North Western.**—Common, \$1.25, quarterly; Preferred, \$1.75, quarterly, both payable June 30 to holders of record June 5.

**Chicago, Rock Island & Pacific.**—Common, \$1.75, quarterly; 6 Per Cent Preferred, \$3.00; 7 Per Cent Preferred, \$3.50, all payable June 30 to holders of record June 6.

**Cleveland & Pittsburgh.**—Guaranteed, \$.87½, quarterly; Special Guaranteed, \$.50, quarterly, both payable June 2 to holders of record May 10.

**Illinois Central, Leased Lines.**—2 per cent, payable July 1 to holders of record June 11.

**St. Louis-San Francisco.**—Common, 2 per cent, quarterly, payable July 1 to holders of record June 2.

**Southern Pacific.**—1½ per cent, quarterly, payable July 1 to holders of record May 26.

**Union Pacific.**—Common, 2½ per cent, quarterly, payable July 1 to holders of record June 2.

### Average Prices of Stocks and of Bonds

	May 13	Last week	Last year
Average price of 20 representative railway stocks.	127.41	126.71	129.73
Average price of 20 representative railway bonds.	93.77	93.58	91.15

## Railway Officers

### Executive

**E. B. Martin** has been elected vice-president of the Mississippi Export, with headquarters at Moss Point, Miss.

**D. D. Moffat** has been appointed vice-president of the Bingham & Garfield, with headquarters at Salt Lake City, Utah.

**George D. Brooke**, general manager of the Chesapeake & Ohio at Richmond, Va., has been appointed vice-president and general manager of the Chesapeake & Ohio Lines with the same headquarters. **R. N. Begien**, vice-president in charge of operation, engineering and construction of the Chesapeake & Ohio, remains in charge of engineering and construction, with headquarters as before at Richmond, Va. **M. S. Connors**, general manager of the Hocking Valley at Columbus, Ohio, has been appointed assistant to Mr. Brooke, retaining his headquarters at Columbus.

**E. L. Bock**, general superintendent of the western district of the Chesapeake & Ohio at Huntington, W. Va., has had his jurisdiction extended over the Hocking Valley, which on May 1 became the Hocking division of the Chesapeake & Ohio.

**J. S. McMillan**, who has been promoted to superintendent of the River division of the St. Louis-San Francisco, with headquarters at Chaffee, Mo., was born at Canandaigua, N. Y., in 1900. When 16 years of age he enlisted in the United States Marine Corps and served for more than two years with the Fifth regiment of the Second division in France. In March, 1920, Mr. McMillan entered railway service as a chainman on the Northern division of the Frisco. Later he served as a rodman and as a transitman and in 1925 he was placed in charge of construction on the cutoff between Brownington, Mo., and Deep Water. He was promoted to assistant superintendent of the River division at Chaffee on January 1, 1926, his further promotion to superintendent of that division becoming effective on April 1.

**Frank Owen Haymond**, general superintendent of the Bingham & Garfield, has been appointed to succeed **L. S. Cates**, resigned, as general manager with headquarters at Salt Lake City, Utah. Mr. Haymond was born in

### Financial, Legal and Accounting

**R. E. Milling, Jr.**, has been appointed general attorney of the Gulf Coast Lines, with headquarters at New Orleans, La.

**W. H. Marsh**, assistant to the president of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., also has been elected secretary.

**F. D. Hodgson**, comptroller of the Hocking Valley at Columbus, becomes assistant comptroller of the Chesapeake & Ohio Lines with headquarters at Richmond, Va.

**Rufus S. Claar**, resident engineer of the Minneapolis, St. Paul & Sault Ste. Marie, has been appointed right of way and real estate agent of the Soo Line and the Duluth, South Shore & Atlantic, with headquarters as before at Minneapolis, Minn., succeeding **John E. Westlake**, who resigned on May 12, to engage in other business.

### Operating

**W. W. Houston**, superintendent of the Hocking Valley at Columbus, Ohio, remains at Columbus as superintendent of the Hocking division of the Chesapeake & Ohio.

**J. W. Womble**, mechanical superintendent of the Midland Valley, the Kansas, Oklahoma & Gulf and the Oklahoma City-Ada-Atoka, has been promoted to general manager, with headquarters as before at Muskogee, Okla.



Frank Owen Haymond

Springville, Utah, and received his education in Utah. He commenced his railway career in 1897, with the Rio Grande Western (now part of the Denver & Rio Grande Western), at Salt Lake City. He served successively as brakeman, conductor, train rules examiner, trainmaster and assistant superintendent until June, 1911, when he became connected with the Bingham & Garfield as assistant superintendent. Later he was advanced to serve as superintendent and then general superintendent, which position he held when he was promoted to general manager.

## Traffic

The management of the mail, baggage and express traffic of the St. Louis-San Francisco has been assigned to **George B. Davis**, assistant to the vice-president in charge of traffic, with headquarters at St. Louis, Mo.

**W. H. Fisher**, general passenger agent of the Hocking Valley at Columbus has retired and the jurisdiction of **T. H. Gurney**, passenger traffic manager of the Chesapeake & Ohio at Richmond, Va., has been extended over the Hocking Division.

**F. A. Key, Jr.**, general freight and passenger agent (rates) of the Louisiana & Arkansas, has been appointed traffic manager in charge of rates and divisions, and **H. R. Whiting**, general freight agent (solicitation) has been appointed traffic manager in charge of solicitation. The positions held by these officers prior to their recent appointments have been abolished.

**William Henry Howard**, whose appointment as general passenger agent of the Atlantic Coast Line was announced in the *Railway Age* of April 19, was born on August 23, 1878, at Cartersville, Ga. He was educated in the local public schools and commenced his railway career with the Southern at Atlanta, Ga., as a stenographer, on April 7, 1899. On January 1, 1901, he was transferred to Washington, D. C., as secretary to the general passenger agent. In April, 1902, he became connected with the Southeastern Passenger Association as assistant secretary and on November 1, 1903, he was promoted to secretary. In September, 1917, he was appointed chairman of the association. During the Federal Control period, January 1, 1918, to February 28, 1920, he served as secretary of the Southern Passenger Traffic Committee, United States Railroad Administration. On March 1, 1920, he was appointed chairman of the re-organized Southeastern Passenger Association. He was appointed to the position of general passenger agent of the Atlantic Coast Line effective April 15.

## Mechanical

**J. W. Small**, chief mechanical officer of the Chesapeake & Ohio at Richmond, Va., has been granted an indefinite leave of absence.

**J. McCoy** has been appointed master mechanic of the Midland Valley, the Kansas, Oklahoma & Gulf and the Oklahoma City-Ada-Atoka, with headquarters at Muskogee, Okla.

**J. Smith**, general foreman on the Canadian National at Toronto, Ont., has been promoted to superintendent of motive power and car equipment of the northern Ontario district at North Bay, Ont., succeeding **J. H. McAlpine**, promoted.

**F. G. Moody**, general car foreman on the Northern Pacific at South Tacoma,

Wash., has been appointed acting master car builder, with headquarters at St. Paul, Minn., temporarily succeeding **H. M. Robertson**, who has been granted a leave of absence because of ill health.

**M. A. Kinney**, formerly superintendent of motive power of the Hocking Valley, which recently was taken over by the Chesapeake & Ohio, and which is to be operated as the Hocking division, is appointed general master mechanic, with headquarters at Columbus, Ohio, with jurisdiction over the Hocking and Chicago divisions.

**L. D. Freeman**, assistant to chief mechanical officer of the Baltimore & Ohio, has been appointed assistant superintendent motive power, with headquarters at Huntington, W. Va., in charge of the locomotive shop at Huntington and the car shop at Russell. The general master mechanic is relieved of jurisdiction over these shops.

## Engineering, Maintenance of Way and Signaling

**W. L. Roller**, engineer maintenance of way of the Hocking Valley, has been appointed division engineer of the Hocking division of the Chesapeake & Ohio, with headquarters as before at Columbus, Ohio. **P. B. Snyder** has been appointed assistant division engineer of the Hocking division at Columbus.

## Purchases and Stores

**A. Singleton**, purchasing agent of the Hocking Valley at Columbus, Ohio, has been appointed assistant purchasing agent of the Chesapeake & Ohio Lines at Richmond, Va.

**J. C. McCaughan**, general storekeeper of the Hocking Valley, has been appointed assistant general storekeeper of the Chesapeake & Ohio, with headquarters as before at Columbus, Ohio.

**J. G. Hilgen**, storekeeper of the Chesapeake & Ohio, at Richmond, Va., has been appointed division storekeeper at Russell, Ky. **E. T. Campbell**, storekeeper at Russell, has been appointed division storekeeper at Richmond.

## Special

**E. H. McReynolds**, editor of the Missouri Pacific Lines Magazine, has been appointed director of publicity and advertising of the Missouri Pacific Lines, with headquarters as before at St. Louis, Mo.

## Obituary

**Oliver E. Hallett**, engineer on the Harlem division of the New York Central, died on May 8, at White Plains, N. Y., in his seventieth year.

**Albion L. Grandy**, assistant to the vice-president and former chief engineer of the Pere Marquette, with headquarters at Detroit, Mich., died at his

home in that city on May 3, following a heart attack.

**Burton J. Rowe**, coal traffic manager of the Illinois Central, with headquarters at Chicago, died at his home in that city on May 12. Mr. Rowe had been in railway service for 41 years. He was born in La Salle county, Ill., on June 7, 1865, and gained his first traffic experience as a clerk in the Chicago, Burlington & Quincy general freight office at St. Joseph, Mo. In 1894 he became a traveling freight and passenger agent on the Illinois Central at St. Louis, Mo., then serving successively as chief clerk in the general freight office, commercial agent and assistant general freight agent at St. Louis. In May, 1911, he was transferred to Chicago. Mr. Rowe had been coal traffic manager of the Illinois Central since July, 1914.

**Conrad F. Krebs**, comptroller of the Chicago Great Western and former comptroller of the Illinois Central, died in Chicago on May 11, following an operation. Mr. Krebs, who had been actively engaged in railway work for 51 years, was born at Louisville, Ky., on October 4, 1855. His first railroad job was as a telegraph operator on the Louisville, Cincinnati & Lexington (now part of the Louisville & Nashville) at Louisville. From 1874 to 1884 he served successively as an operator and assistant train dispatcher on the Louisville, Paducah & Southwestern (now part of the L. & N.), operator, superintendent's clerk, general superintendent's clerk and



C. F. Krebs

private secretary to the vice-president of the L. & N., and general superintendent's clerk and assistant to the vice-president on the Chesapeake, Ohio & Southwestern (now part of the L. & N.). Mr. Krebs was then appointed auditor of the C., O. & S. W., and the Newport News & Mississippi Valley (now the Chesapeake & Ohio). In July, 1897, he was appointed auditor of disbursements of the Illinois Central, being promoted to assistant comptroller in April, 1902, and to comptroller in February, 1904. He entered the service of the Great Western on January 1, 1911, as auditor and after filling that position and that of general auditor he was promoted to comptroller in 1920.